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<tr>
<td>October 17</td>
<td>Monday End Course Withdrawals (&quot;W&quot;) Period, Repeat/Delete Deadline</td>
</tr>
<tr>
<td>November 19</td>
<td>Saturday Fall Recess Begins, No Classes Next Week</td>
</tr>
<tr>
<td>November 24-25</td>
<td>Thursday-Friday Holiday - University Offices Closed</td>
</tr>
<tr>
<td>November 28</td>
<td>Monday Classes Resume</td>
</tr>
<tr>
<td>December 9</td>
<td>Friday Last Day of Classes; University Withdrawal Deadline</td>
</tr>
<tr>
<td>December 12-16</td>
<td>Monday-Friday Final Examinations</td>
</tr>
<tr>
<td>December 16-17</td>
<td>Friday-Saturday Commencement</td>
</tr>
<tr>
<td>December 20</td>
<td>Tuesday Grades Due</td>
</tr>
<tr>
<td>December 26-28</td>
<td>Monday-Wednesday Holiday - University Offices Closed</td>
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### Spring Semester - 2017

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>January 2</td>
<td>Monday Holiday - University Offices Closed</td>
</tr>
<tr>
<td>January 12-13</td>
<td>Thursday-Friday Orientation, Advising and Registration for New Students</td>
</tr>
<tr>
<td>January 16</td>
<td>Monday Holiday - University Offices Closed</td>
</tr>
<tr>
<td>January 17</td>
<td>Tuesday Classes Begin</td>
</tr>
<tr>
<td>January 20</td>
<td>Friday End Restricted Drop</td>
</tr>
<tr>
<td>January 22</td>
<td>Sunday End Add Without Override</td>
</tr>
<tr>
<td>February 1</td>
<td>Wednesday Registration Closes - end of period for adding courses - last day for dropping courses without record entry, changes in grade option, and tuition and fee adjustment</td>
</tr>
<tr>
<td>March 11</td>
<td>Saturday Spring Break Begins - No Classes Next Week</td>
</tr>
<tr>
<td>March 20</td>
<td>Monday End Course Withdrawal (&quot;W&quot;) Period, Repeat/Delete Deadline</td>
</tr>
<tr>
<td>March 20</td>
<td>Monday Classes Resume</td>
</tr>
<tr>
<td>May 5</td>
<td>Friday Last Day of Classes; University Withdrawal Deadline</td>
</tr>
<tr>
<td>May 8-12</td>
<td>Monday-Friday Final Examinations</td>
</tr>
<tr>
<td>May 12-13</td>
<td>Friday-Saturday Commencement</td>
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### Summer Session - 2017

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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>May 15</td>
<td>Monday 1st 4 Week and 12 Week Terms Begin</td>
</tr>
<tr>
<td>May 29</td>
<td>Monday Holiday - University Offices Closed - No Classes</td>
</tr>
<tr>
<td>June 9</td>
<td>Friday 1st 4 Week Term Ends</td>
</tr>
<tr>
<td>June 12</td>
<td>Monday 2nd 4 Week Term and 8 Week Terms Begin</td>
</tr>
<tr>
<td>June 21</td>
<td>Wednesday Census</td>
</tr>
<tr>
<td>July 4</td>
<td>Tuesday Holiday - University Offices Closed - No Classes</td>
</tr>
<tr>
<td>July 7</td>
<td>Friday 2nd 4 Week Term Ends</td>
</tr>
<tr>
<td>July 10</td>
<td>Monday 3rd 4 Week Term Begins</td>
</tr>
<tr>
<td>July 24</td>
<td>Monday Repeat/Delete Deadline</td>
</tr>
<tr>
<td>August 4</td>
<td>Friday 8 Week, 12 Week, and 3rd 4 Week Terms End</td>
</tr>
<tr>
<td>August 8</td>
<td>Tuesday Grades Due</td>
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### Fall Semester - 2017

<table>
<thead>
<tr>
<th>Date</th>
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<tbody>
<tr>
<td>August 17-18</td>
<td>Thursday-Friday Orientation</td>
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<tr>
<td>August 21</td>
<td>Monday Classes Begin</td>
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<tr>
<td>August 25</td>
<td>Friday End Restricted Drop</td>
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<tr>
<td>August 27</td>
<td>Sunday End Add Without Override</td>
</tr>
<tr>
<td>September 4</td>
<td>Monday Holiday - University Offices Closed - No Classes</td>
</tr>
<tr>
<td>September 6</td>
<td>Wednesday Registration Closes - end of period for adding courses - last day for dropping courses without record entry, changes in grade option, and tuition and fee adjustment</td>
</tr>
<tr>
<td>October 16</td>
<td>Monday End Course Withdrawals (&quot;W&quot;) Period, Repeat/Delete Deadline</td>
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<tr>
<td>November 18</td>
<td>Saturday Fall Recess Begins, No Classes Next Week</td>
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<tr>
<td>November 23-24</td>
<td>Thursday-Friday Holiday - University Offices Closed</td>
</tr>
<tr>
<td>November 27</td>
<td>Monday Classes Resume</td>
</tr>
<tr>
<td>December 8</td>
<td>Friday Last Day of Classes; University Withdrawal Deadline</td>
</tr>
<tr>
<td>December 11-15</td>
<td>Monday-Friday Final Examinations</td>
</tr>
<tr>
<td>December 15-16</td>
<td>Friday-Saturday Commencement</td>
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<tr>
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### Spring Semester - 2018

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<tr>
<td>January 1</td>
<td>Monday Holiday - University Offices Closed</td>
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<td>Thursday-Friday Orientation, Advising and Registration for New Students</td>
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**Summer Session - 2018**

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<thead>
<tr>
<th>Date</th>
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<tbody>
<tr>
<td>May 14</td>
<td>Monday 1st 4 Week and 12 Week Terms Begin</td>
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<tr>
<td>May 28</td>
<td>Monday Holiday - University Offices Closed - No Classes</td>
</tr>
<tr>
<td>June 8</td>
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</tr>
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One of the hallmarks of an educated person is the recognition of how much we don’t know—and how often we can be surprised by the important questions we hadn’t thought to ask.

Colorado State University students can minimize the possibility of surprises related to University policies, expectations, and resources by taking the time to become familiar with this General Catalog. As the encapsulation of our academic mission and program, the General Catalog should be considered an essential roadmap for navigating through the many timelines, decisions, and choices involved with earning your degree, and it often will be the best place to find the answer to questions about University operations and protocols.

As an inclusive community of scholars, we are all here—as students, faculty, and staff—because we value learning and understand that earning an academic degree requires considerable work, sacrifice, and determination. Throughout this challenging, life-changing process, I encourage you to seek out and take full advantage of all the resources available to support your success. Meet with your professors, don’t be afraid to ask for help or assistance, and regularly consult with both your advisor and this catalog to ensure you’re on track.

Armed with spirit, commitment, and information, your academic goals are well within your reach. Best wishes for a successful CSU experience!

Dr. Tony Frank
President

- University Mission, Values, and Guiding Principles
- Campus Map
- University Welcome Center

University Mission, Values, and Guiding Principles

- Mission
- Values
- Guiding Principles
- Strategic Plan

- By statute, Colorado State University is a comprehensive graduate research university with selective admission standards. Charged with offering a comprehensive array of baccalaureate, master’s, and doctoral programs, it holds exclusive statewide authority for programs in agriculture, forestry, natural resources, and veterinary medicine.

- Colorado State University has a unique mission in the state of Colorado. The land-grant concept of a balanced program of teaching, research, extension, public service, and engagement provides the foundation for the University’s teaching and research programs, Agricultural Experiment Station, Cooperative Extension, and Colorado State Forest Service. The University has long been a leader in recognizing the rapidly changing global environment, and has a commitment to excellence in international education in all its instructional, research, and outreach programs. The University continues to make education and training accessible to deserving applicants from all classes and groups, and maintains a wide range of research, extension, and public service programs in response to the needs of the people of Colorado, the nation, and the world.

In May 2010, the Board of Governors adopted the following mission and values statements for Colorado State University.

Mission

Inspired by its land-grant heritage, Colorado State University is committed to excellence, setting the standard for public research universities in teaching, research, service and extension for the benefit of the citizens of Colorado, the United States and the world.

CSU has further adopted the following values:

Values

- Be accountable
- Promote civic responsibility
- Employ a customer focus
- Promote freedom of expression
- Demonstrate inclusiveness and diversity
- Encourage and reward innovation
• Act with integrity and mutual respect
• Provide opportunity and access
• Support excellence in teaching and research

**Guiding Principles**

CSU is a community dedicated to higher learning in which all members share in pursuit of knowledge, development of students, and protection of essential conditions conducive for learning. These protections are presented in the form of university policies, applicable federal and state laws, and statements of fundamental rights and responsibilities, which govern both the academic setting and the university community as a whole. Some of the policies and expectations described in this Catalog are among those most relevant to students, faculty, and staff; others are focused specifically on the student population but are not intended to serve as an exhaustive list of all policies that pertain to students or life on campus. A complete guide to CSU policies is available online through the Office of Policy and Compliance (http://opc.prep.colostate.edu).

CSU expects students to maintain standards of personal integrity that are in harmony with the educational goals of the institution; to observe national, state, and local laws, and University regulations; and to respect the rights, privileges, and property of other people. Principles of academic honesty, respect for diversity, and pursuit of lifestyles free of alcohol and drug abuse are examples of these standards. Students are not only members of the academic community; they are, additionally, members of the larger society and thus retain the rights, protection guarantees, and responsibilities which are held by all citizens.

**Commitment to Diversity**

CSU has a unique mission in the State of Colorado. As a land grant university we are committed to a foundational principle of inclusive excellence recognizing that our institutional success depends on how well we welcome, value, and affirm all members of the CSU community. Only through the inclusion of the rich diversity of students, staff, faculty, administrators, and alumni can we truly be excellent in our pursuits.

Our inclusive excellence efforts hinge on four key ideas:

**Broad and inclusive definition of diversity.**

We recognize that to truly be inclusive we must draw attention to the depth and breadth of the diversity represented at CSU. Our definition includes age, culture, different ideas and perspectives, disability, ethnicity, first generation status, familial status, gender identity and expression, geographic background, marital status, national origin, race, religious and spiritual beliefs, sex, sexual orientation, socioeconomic status, and veteran status. We also recognize that the historical exclusion and marginalization of specific social groups must be addressed to promote equity.

**Inclusiveness and excellence are interdependent.**

We recognize that to continue to stay current in the global marketplace and stay relevant in an increasingly diverse world, we must embody inclusiveness. To practice inclusiveness is excellence.

**Everyone is responsible for inclusive excellence.**

All members of the campus community (administrators, faculty, staff, students, and alumni) must recognize and assume responsibility for the climate of the university. A unit or person can drive the process, but every individual at CSU assumes responsibility for positive change.

Inclusive excellence goes beyond numbers.

Historically, diversity has been gauged by demographics or numbers; we must move beyond solely numbers toward an inclusive community that embeds diversity throughout the institution in multiple areas including demographics, policies, and communications; curriculum, pedagogy, and student learning; recruitment, hiring and retention, evaluation and supervision.

Achieving inclusive excellence is a long-term commitment and must have a comprehensive broad approach, embedding appreciation of all members and inclusion best practices into the very fabric of CSU’s organizational culture.

**Equal Opportunity and Nondiscrimination**

CSU does not discriminate on the basis of race, age, creed, color, religion, national origin or ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, or gender identity or expression, or pregnancy, and will not discharge or in any other manner discriminate against employees or applicants because they have inquired about, discussed, or disclosed their own pay or the pay of another employee or applicant. CSU complies with the Civil Rights Act of 1964, related Executive Orders 11246 and 11375, Title IX of the Education Amendments Act of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veterans’ Reemployment Assistance Act of 1974, as amended, the Age Discrimination in Employment Act of 1967, as amended, Americans with Disabilities Act of 1990, the Civil Rights Act of 1991, the ADA Amendments Act of 2008, the Genetic Information Nondiscrimination Act of 2008, and all civil rights laws of the State of Colorado. Accordingly, equal opportunity of employment and admission shall be extended to all persons. CSU shall promote equal opportunity and treatment in employment through a positive and continuing affirmative action program for ethnic minorities, women, persons with disabilities, and veterans.

Admission of students, employment, and availability and access to CSU’s programs and activities are made in accordance with these policies of nondiscrimination. Off campus householders who desire to list student accommodations with CSU must certify that they will comply with CSU’s policy on nondiscrimination in student housing.

Any student or University employee who encounters acts of discrimination, either on or off campus, is urged to report such incidents to the Office of Equal Opportunity of CSU, located in 101 Student Services. Any person who wishes to discuss a possible discriminatory act without filing a complaint is welcome to do so.

Any of the above discriminatory acts can also be the subject of complaints to the Department of Education, Office for Civil Rights, as well as to the Office of Federal Contract Compliance Programs, Equal Employment Opportunity Commission, and the Colorado Civil Rights Division; information on filing complaints with any of these agencies is available in the Office of Equal Opportunity (http://ooe.colostate.edu).

**Freedom from Personal Abuse**

CSU acknowledges the right of all people to freedom from personal abuse. Abusive treatment of individuals on a personal or stereotyped basis prevents the attainment of CSU’s objective to create and maintain an environment that supports, nurtures, and encourages people to excel in teaching, learning, and creativity. Therefore, CSU deplores, condemns, and will act energetically to prevent all forms of personal abuse, including sexual harassment. For statements of university policy concerning
discrimination, harassment, sexual harassment, and other misconduct, see the University Policies section of this Catalog.

**Principles of Community**

The Principles of Community support the Colorado State University mission and vision of access, research, teaching, service and engagement. A collaborative and vibrant community is a foundation for learning, critical inquiry, and discovery. Therefore, each member of the CSU community has a responsibility to uphold these principles when engaging with one another and acting on behalf of the University.

**Inclusion:** We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions.

**Integrity:** We are accountable for our actions and will act ethically and honestly in all our interactions.

**Respect:** We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

**Service:** We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.

**Social Justice:** We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

**Strategic Plan**

A comprehensive 10-year strategic plan for achieving this mission in a way that supports these values was adopted in 2006 and revised in January 2014. This revised strategic plan has the following key objectives:

**Teaching and Learning**
- Assure excellence in academic programs
- Create distinctive undergraduate experiences
- Enhance the quality and role of graduate education
- Expose students to diverse cultures
- Integrate academic and co-curricular experiences

**Research and Discovery**
- Foster excellence in research, scholarship, and creative artistry
- Improve discovery capabilities
- Focus research in key areas of institutional strength and societal and global needs

**Outreach and Engagement**
- Engage citizens through community involvement
- Prepare and empower learners outside the campus environment
- Foster excellence in intercollegiate athletics

**Sustainability, Accountability, Infrastructure**
- Expand fundraising and marketing
- Build necessary infrastructures
- Nurture human capital

- Guarantee financial stability

**Diversity**
- Embed commitment to diversity in all key objectives
- Promote an environment that encourages excellence, access, and inclusion

For a copy of the full plan, see the Office of the Provost (http://provost.colostate.edu).

**Campus Map**

Interactive Campus Maps (http://maps.colostate.edu)

**University Welcome Center**

Ammons Hall

The University Welcome Center in Ammons Hall serves as the CSU’s official front door for our visitors and friends. Located on the historic Oval, the center offers general information about campus and the Fort Collins community.

**Admissions Tours for Prospective Students**

Ammons Hall is also home to the Office of Admissions. Daily information sessions and tours of campus are offered most weekdays. Tours begin in Ammons Hall and give prospective students and their families a great
overview of the University. The Transfer Student Center is in the TILT Building, conveniently located just across the street.

- Visit Opportunities (http://admissions.colostate.edu/visit)

**Hours, Parking, and Directions**

Ammons Hall  
(970) 491-6909  
Weekdays: 9 a.m. to 5 p.m. (MT)  
Select Saturdays: 9 a.m. to 12 p.m. (MT)

Transfer Student Center  
(970) 491-1858  
Weekdays: 9 a.m. to 5 p.m. (MT)

The best address to use in your GPS is 711 Oval Drive, Fort Collins, CO 80521.

- Directions to the Welcome Center and other popular campus destinations (http://ramtrax.colostate.edu/directions-and-parking)  
- Parking on campus (http://parking.colostate.edu/pages/WhereCanIPark.aspx)

**RamTrax Tours for Community Members and Other Groups**

RamTrax is CSU’s premier visitor experience developed to showcase the University’s outstanding academic programs, highlight our prestigious research and expand outreach to the community.

- More information, including CSU events and resources that are open to the public (http://ramtrax.colostate.edu)
UNIVERSITY POLICIES

The following is a listing of university policies that are of particular interest to students and their families. A complete guide to University Policies is available in the online CSU Policy Library (http://policylibrary.colostate.edu).

- Campus Safety and Clery Act
- Consensual Relationships
- FERPA (Student Privacy)
- Freedom of Expression and Inquiry
- Free Speech and Right to Peaceful Assembly
- Hazing
- Discrimination, Harassment, Sexual Assault, and Violence
- Alcohol and Sexual Assault Prevention Training
- Students’ Rights
- Students’ Responsibilities

Campus Safety and The Clery Act

The Jeanne Clery Disclosure of Campus Security and Campus Crime Statistics Act (“Clery Act”) is the landmark federal law that requires colleges and universities to disclose information on security policies and timely, annual information about crime on and around campus.

Crime Statistics—Annual Update

The Colorado State University Police Department (http://police.colostate.edu) is responsible for releasing campus crime statistics to the CSU community. The Annual Fire and Safety Report (http://police.colostate.edu/clery-act) informs the CSU community about important procedures, policies, crime prevention programs, and crime statistics for the previous three years concerning reported crimes that occurred on-campus, in certain off-campus buildings or property owned or controlled by CSU, and on public property adjoining campus.

The Fire and Safety Update report is available to anyone requesting a copy and a notice of its availability is sent to all students and staff when the annual report is released in the fall. It can be found online through Public Safety (http://safety.colostate.edu/cleryact), or by contacting the CSU Police Department at (970) 491-6425.

Emergency Notifications and Timely Warnings

The Clery Act requires the university to notify the campus community about serious threats to safety on campus. When the threat is serious and immediate, the university will issue an “emergency notification” to the campus (or, where appropriate, to those directly affected by the threat). Notifications may be made through any or all of the following methods:

1. CSU e-mail system
2. RAVE Alert text-based messaging system
3. Everbridge/ Reverse 911
4. CSU Emergency Telephone Network
5. Emergency Broadcast System

When the threat is no longer deemed serious or immediate, a statement will be issued indicating the return to normal conditions.

When a crime covered under the Clery Act has been committed on campus property (or, in some cases, other property covered by the Clery Act), but the facts do not indicate that the issuance of an emergency notification is appropriate, then the university may determine that a “timely warning” notification should be issued. The purpose of a timely warning is to keep the campus community informed about safety and security issues on an ongoing basis and to aid in the prevention of similar crimes. In order to warrant a timely warning, the crime committed must be determined by the university to constitute a serious and continuing threat to students and/or employees. Such a warning puts the community on alert, helps to educate students and employees about dangers on campus, and in some cases, may even lead to the apprehension of a suspect or reduction of the threat.

For more information about emergency notifications and timely warning procedures, see the CSU Campus Safety (Clery Act) Policy (http://policylibrary.colostate.edu/policy.aspx?id=557).

Missing Student Notification

When a student who resides in campus housing is reported missing, the university will initiate an investigation to determine whether the student is indeed missing. If there is good cause to believe the student is missing, the university may (among other measures) attempt to contact the individual(s) designated as confidential contacts by the student for such purposes, and, in the case of an unemancipated minor under the age of 18, the student’s parent(s) or guardian. Law enforcement authorities (CSU Police) will also be contacted, if they have not already been notified of the concern. If you believe a CSU student is missing, you should immediately contact the CSU Police Department by calling (970) 491-6425. See the Missing Student Notification procedures in the CSU Campus Safety (Clery Act) Policy (http://policylibrary.colostate.edu/policy.aspx?id=557) for more information.

Registered Sex Offenders

The CSU Police Department is required to notify the CSU community about where public information regarding registered sex offenders can be obtained (“Megan’s Law”). A current listing of sex offenders is available at the Colorado Bureau of Investigation Convicted Sex Offender Site (https://www.colorado.gov/apps/cdps/sor).
CSU Police Department Services
The CSU Police Department offers additional services to the CSU community.

Consensual Relationships
CSU is committed to the principle that its personnel shall carry out their duties in an objective and ethical fashion and in an atmosphere in which conflicts of interest are identified and managed. CSU does not interfere with private choices regarding personal relationships when these relationships do not interfere with the goals and policies of CSU. However, consensual romantic or sexual relationships in which one party retains a direct supervisory or evaluative role over the other party have the potential to interfere with these goals and policies. Therefore, consistent with its commitment to objectivity and ethical behavior, CSU is required to intervene in such circumstances.

A romantic, intimate, or sexual relationship in which one individual is in a position to exercise authority over the other creates conflicts of interest and perceptions of undue advantage or disadvantage. When both parties have consented at the outset to a romantic, intimate, or sexual relationship, this consent does not remove grounds for a charge of conflict of interest, sexual harassment, or violation of applicable parts of CSU’s Code of Ethical Behavior, based upon subsequent unwelcome conduct. Pursuant to this policy, faculty members and other university employees are prohibited from entering into consensual, unwelcome conduct. Pursuant to this policy, faculty members and other university employees are prohibited from entering into consensual, intimate relationships with students over whom they exercise authority. Refer to the full CSU Policy on Consensual Relationships (http://oee.colostate.edu/consensual-relationships-policy), along with procedures for reporting any violation of such policy.

Retaliation against persons who report concerns about consensual relationships is also prohibited and constitutes a violation of this policy.

FERPA (Student Privacy)

Family Education Rights and Privacy Act
Students have certain rights concerning their “education records” under the Family Education Rights and Privacy Act (FERPA), as amended, 20 U.S.C. 1232g et. seq. These include:

1. The right to inspect and review the student’s education records within 45 days of the day CSU receives the request for access. All enrolled and former students may have access to their education records maintained by CSU. Written requests identifying the record(s) to be inspected should be submitted to the Registrar’s Office, or, in the case of graduate studies, to the Graduate School. The CSU official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the CSU official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed. A student may receive one copy of each item of information contained in the education record at a cost of $.25 (charge subject to change) per page.

2. The right to request the amendment of the student’s education records that the student believes are inaccurate or misleading.

Students may ask CSU to amend a record that they believe is inaccurate or misleading. They should write the CSU official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading.

If CSU decides not to amend the record as requested by the student, CSU will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. The right to consent to disclosure of personally identifiable information (defined below) contained in the student’s education records, except to the extent that FERPA authorizes disclosure without consent.

Individuals and agencies having access to a student's records without the student’s consent include “school officials,” defined below, with legitimate educational interests; parents claiming a student as a dependent on their federal income tax; scholarship and other financial aid organizations supporting the student; organizations conducting studies for, or on behalf of, educational agencies or institutions for the purpose of developing, validating, or administering predictive tests, student aid programs, or to improve instruction; organizations carrying out accrediting functions of programs offered by CSU; appropriate person(s) in an emergency; and any party designated by judicial order or subpoena, provided that, except for subpoenas and orders issued for law enforcement purposes, CSU first notifies the student of the order or subpoena. Any other individual or organization must have a student’s written consent to view or have access to the education record. For purposes of disclosure of information about the student to school officials with legitimate educational interests, a “school official” is a person employed by CSU in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel in an educational role and health staff); a person or company with whom CSU has contracted (such as an attorney, auditor, or collection agent); a person serving on the governing board of CSU; or a student serving on an official committee, or in a volunteer capacity, such as a peer mentor or member of a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. Such officials have legitimate educational interests when they need to review a student’s education records to fulfill their responsibilities to CSU. As an example of a company with whom CSU has contracted, CSU works with the National Student Clearinghouse which provides a Current Enrollment Verification Certificate and/or degree verification to students and vendors indicating whether the students are enrolled for part-time or full-time status at CSU, or have received a degree.

Furthermore, CSU discloses students’ education records without consent, upon request, to officials of other schools in which a student seeks to or intends to enroll.

Students can authorize the release of their private information through FAMweb (http://parentsandfamily.colostate.edu/famweb), a secure online portal that provides limited access to a student’s education records to families and trusted individuals designated by the student. In RAMweb, the secure online student portal, the student sets permissions to allow others to access certain categories of education records that are frequently requested for release. The following types of student information can be viewed in FAMweb:

- eBilling information
- Grades for the last completed term
• Unofficial transcript
• Class schedule for the semester in session
• Tax information

An exception to the requirement for prior authorization for release of records exists for public release of “directory information” which is published in university directories and may be released to third parties. FERPA allows a student to limit the release of directory information; see the Registrar’s website (http://registrar.colostate.edu/student-resources/ferpa-student-privacy) for procedures to apply restrictions on directory information.

Colorado State defines “directory information” as the following:

• Student name
• Current mailing address
• E-Mail address
• Telephone number
• Major field of study
• Classification level (freshman, sophomore, junior, senior, graduate)
• Dates of attendance
• Current or previous enrollment status (full-time, half-time, three-quarters, and/or less than half-time)
• Anticipated date/term of graduation and expected degree(s)
• Honors and degrees awarded
• Participation in officially recognized activities and sports
• Height and weight of athletic team members
• Video and photographic images of students with the exception of the official CSU identification photograph

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by CSU to comply with the requirements of FERPA. The name and address of the office that administers FERPA is: Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Ave. SW, Washington, DC 20202-4605.

Personally Identifiable (Private) Information

Personally identifiable, or private, information includes age, date and place of birth. It also includes grades, Social Security number, CSUID number, class schedule, residency, and class rank. None of these items may be released without the student’s permission, except as otherwise allowed by FERPA.

Deceased Student Information Disclosure

Due to the sensitivity and privacy issues involved in student deaths, a Confidential Information alert will be placed on the deceased student’s accounts and records to block public access to all personal and academic information once verification of the death is confirmed.

Access to Student’s and their Family’s Contact Information

CSU does not provide a service of producing student directory information lists for external requestors. Student directory information is available by individual name search in the Find People (http://search.colostate.edu/search-directory.aspx) public/online directory accessed through the CSU web page. Requests for family contact information (e.g., invitations to honorary societies or marketing for care packages) are limited and require advance approval from the Dean of Students.

Further information about CSU’s FERPA policy (http://policylibrary.colostate.edu/policy.aspx?id=591) and related guidance and resources are available from the Office of the Registrar (http://registrar.colostate.edu).

Freedom of Expression and Inquiry

The faculty of CSU considers freedom of discussion, inquiry, and expression to be in keeping with the history and traditions of our country and to be a cornerstone of education in a democracy. CSU is committed to valuing and respecting diversity, including respect for diverse viewpoints. If any members of our campus community (students, faculty, or staff) feel that they have been treated unfairly because of their views, they should contact the Office of Conflict Resolution and Student Conduct Services (http://www.conflictresolution.colostate.edu) in Aylesworth Hall NW, Room 325. The policy of CSU is to encourage members of the CSU community to engage in discussion, to exchange ideas and opinions, and to speak, write, and publish freely in accordance with the guarantees and limitations of our state and national constitutions.

Faculty and students have not only a right, but also a responsibility, to examine critically the insights, understandings, values, issues, and concerns which have evolved in the various areas of human activity. Consequently, it is the policy of the University that CSU-registered student organizations may extend invitations for guest lecturers, exhibitors, performers, and exhibitions of works of art with no restrictions of form or content other than those imposed by law. It is understood that inviting a speaker, performer, or exhibit does not imply concurrence of the CSU or of the sponsoring organization with the opinions, beliefs, or values expressed.

In exercising their rights, members of the CSU community should understand that the public may judge the institution by their actions. Hence, they should at all times strive to be honest and accurate, exercise appropriate restraint, and show appropriate respect for the opinions of others.

Free Speech and Right to Peaceful Assembly

CSU acknowledges the rights of students and others to engage in free speech and to assemble in groups for peaceful purposes. At such gatherings, CSU expects the rights and privileges of all persons to be respected and that there will be no endangerment to health or safety. Such gatherings must in no way disrupt the normal conduct of University affairs or endanger University property.

CSU may, consistent with the constitution, establish reasonable regulations regarding the time, place, and manner in which persons exercise their free speech rights to the extent necessary to prevent disruption of the normal conduct of University affairs or endangerment of health and safety of persons or damage to property. Accordingly, persons planning such assemblies on the CSU campus must coordinate their activities and plans in advance through the Lory Student Center Event Planning Office (http://sc.colostate.edu/event-planning.aspx). The sponsoring individual or group must assume responsibility for compliance with all state and municipal laws and CSU policies. Assistance from staff is available to help plan such events, and the assistance of University police may be requested to help with traffic or crowds.

Any act by demonstrators or groups which interferes with the rights of others, disrupts the normal functioning of CSU, damages property,
or endangers health or safety is grounds for suspension or dismissal from the University and/or removal from University property. In addition, such actions may also be the basis for criminal charges by law enforcement authorities. Demonstrations are prohibited in any special-use facility, classroom, and in any place or manner that interferes with educational and other normal functions and operations of the institution. Demonstrators refusing to vacate premises upon request are subject to immediate temporary suspension and arrest under applicable municipal and state laws.

Commercial speech may be regulated by the University to a greater extent than noncommercial speech and expressive activities. Commercial speech is any form of expression or activity that is primarily intended to advertise, market, sell, or promote goods and services on behalf of any person or entity that is not a CSU department or affiliated organization. Soliciting for contributions or donations is included in the definition of commercial speech. The University is under no obligation to make any campus areas or facilities available for commercial activities. When permitted, commercial speech should promote an educational, rather than commercial atmosphere on campus, prevent exploitation of students, and preserve the tranquility of the campus. In order to promote these objectives, the Campus Activities Director acts as, or may designate, a coordinator for commercial events held on campus, including (but not limited to) events at the Lory Student Center Plaza. The coordinator is responsible for working with student organizations, other sponsors, and vendors to assure that events are in accordance with University regulations.

To learn more about the University's policy on the right to peaceful assembly and the procedures for reserving space, visit the Lory Student Center (http://www.sc.colostate.edu/lsc-policies.aspx#assembly) website.

**Hazing**

Hazing is against the law in Colorado and is a violation of the Student Conduct Code (http://www.conflictresolution.colostate.edu/prohibited-conduct-organizations) that may result in discipline of individuals and student organizations who engage in such conduct. Inaction or acquiescence in the presence of hazing are likewise considered violations.

Hazing means any activity by which a person recklessly endangers the health or safety of or causes a risk of bodily injury to an individual for purpose of initiation or admission into or affiliation with any student organization; except that hazing does not include customary athletic events or other similar contests or competitions, or authorized training activities conducted by members of the armed forces of the State of Colorado or the United States. Hazing includes but is not limited to:

1. Forced and prolonged physical activity;
2. Forced consumption of any food, beverage, medication, or controlled substance, whether or not prescribed, in excess of the usual amounts for human consumption or of any substance not generally intended for human consumption;
3. Prolonged deprivation of sleep, food, or drink.

Physical hazing includes any physical activity which is harmful to the individual (i.e. paddling, abandonment, excessive exercise, eating repulsive food, exposure to extreme temperatures, nudity, consumption of alcohol or drugs, etc.).

Psychological hazing includes acts which compromise the personal dignity of an individual, thereby causing personal embarrassment or shame to the individual; causing an individual to be the object of malicious amusement or ridicule; or causing an individual psychological harm or emotional strain.

Any requirements by an initiate or new member which compel another initiate or new member to participate in any activity which is illegal, which is known by the compelling party to be contrary to the individual's moral or religious beliefs, or which is contrary to the rules/regulations of the university, shall be construed as hazing.

**Discrimination, Harassment, Sexual Assault, and Violence**

**Discrimination, Harassment, Sexual Harassment, Sexual Misconduct, Domestic Violence, Dating Violence, Stalking, and Retaliation**

CSU is committed to providing an environment that respects the dignity and worth of every member of its community. CSU strives to create and maintain a work and study environment that is fair, inclusive, and responsible so that each member of the CSU community is treated with dignity and respect and is rewarded for relevant considerations such as ability and performance. CSU has adopted a comprehensive policy (http://oeo.colostate.edu/discrimination-harassment-sexual-harassment-sexual-misconduct-domestic-violence-dating-violence-stalking-and-retaliation-policy) to define the types of conduct that are prohibited as a means of achieving these goals and to prevent harm arising from discrimination, harassment, sexual harassment, sexual misconduct, domestic violence, dating violence, stalking, and retaliation. All students, faculty, staff, and other persons having business with CSU are expected to know and follow this policy.

Details regarding what is involved in bringing a complaint and the procedures for informal and formal resolution are available from the Office of Support and Safety Assessment (http://www.supportandsafety.colostate.edu) for student-to-student behavior and the Office of Equal Opportunity (http://oeo.colostate.edu) for matters involving non-students such as faculty, staff, or visitors and matters involving a student and non-student person.

**Alcohol and Sexual Assault Prevention Training**

CSU is committed to providing a safe campus for all students and promoting a culture of respect and dignity. As a result, CSU requires students to complete the Haven: Understanding Sexual Assault and AlcoholEdu programs.

All admitted students are required to complete the Haven: Understanding Sexual Assault™ Program, which educates students on issues associated with stalking, relationship violence, and sexual assault. Students learn about consent, how to help a friend, and how to intervene in a situation that might escalate to sexual assault. Built in collaboration with leading researchers and practitioners, Haven is an interactive module designed to engage and empower students to create safe, healthy campus environments. This course meets the educational mandate
Students' Rights

As members of the CSU community, students can reasonably expect the following:

1. Students have the right to freedom from discrimination or harassment on the basis of race, ethnicity, gender, sexual orientation, religion, creed, political beliefs, national origin, age, or disability.

2. The University shall not interfere with the rights of students to join associations.

3. Students should have accurate information relating to maintenance of acceptable academic standing, graduation requirements, program student learning outcomes, and individual course objectives and requirements.

4. Student records will be maintained in keeping with the Family Education Rights and Privacy Act of 1974 and subsequent amendments and the guidelines for implementation.

5. In all instances of general discipline, academic discipline, and academic evaluation, the student has the right to fair and impartial treatment.

6. CSU considers freedom of inquiry and discussion essential to a student’s educational development. Thus, the University recognizes the right of all students to engage in discussion, to exchange thought and opinion, and to speak, write, or print freely on any subject in accordance with the guarantees of Federal or State constitutions. This broad principle is the cornerstone of education in a democracy.

7. Students have the right to be free from illegal searches and seizures.

8. Students have the right to freely exercise their full rights as citizens.

   In this light, the University affirms the right of students to exercise their freedoms without fear of University interference for such activity.

   • Student Bill of Rights
   • Students' Rights Regarding Their Education Records
   • Right to Discuss Concerns with Department Heads/Chairs
   • Right to File a Grade Appeal
   • Right to File a Complaint
   • Right to Seek Membership in Student Organizations
   • Victims' Rights
   • Resources

Student Bill of Rights

The Colorado Student Bill of Rights, Colo. Rev. Stat. § 23-1-125, guarantees certain rights and expectations for various aspects of student academic life including advising, transferability of credits, and degree completion.

One such right is that a student may enter into an agreement with the University to formalize a plan to obtain a degree in four years (§ 23-1-125(1)(b), C.R.S.). CSU supports this timeline for graduation by publishing advising guidelines under which a student may expect to graduate in four years, and also maintains Major Completion Maps. Major Completion Maps (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap) are designed to assist students and their advisors in building a semester-by-semester course schedule that will enable students to complete their baccalaureate degree within the minimum number of semesters established in the major's program of study.

Major Completion Maps have been approved through the University’s curriculum process. Since the General Catalog has an earlier publication date, the program of study printed in the catalog may not reflect the current published Major Completion Map.

There are some majors that a student may not be able to complete in four years because of additional degree requirements recognized by the Colorado Department of Higher Education.

The Bill of Rights also includes:

§ 23-1-125. Commission directive - student bill of rights - degree requirements - implementation of core courses - competency test - prior learning

1. Student bill of rights. The general assembly hereby finds that students enrolled in public institutions of higher education shall have the following rights:
   a. Students should be able to complete their associate of arts and associate of science degree programs in no more than sixty credit hours or their baccalaureate programs in no more than one hundred twenty credit hours unless there are additional degree requirements recognized by the commission;
   b. A student can sign a two-year or four-year graduation agreement that formalizes a plan for that student to obtain a degree in two or four years, unless there are additional degree requirements recognized by the commission;
   c. Students have a right to clear and concise information concerning which courses must be completed successfully to complete their degrees;
   d. Students have a right to know which courses are transferable among the state public two-year and four-year institutions of higher education;
   e. Students, upon completion of core general education courses, regardless of the delivery method, should have those courses satisfy the core course requirements of all Colorado public institutions of higher education;
   f. Students have a right to know if courses from one or more public higher education institutions satisfy the students’ degree requirements;
   g. A student’s credit for the completion of the core requirements and core courses shall not expire for ten years from the date of initial enrollment and shall be transferrable [sic].
Students’ Rights Regarding Their Education Records

Students have certain rights concerning their “education records” under the Family Education Rights and Privacy Act (FERPA), as amended, 20 U.S.C. 1232g et. seq. Please see the FERPA (Student Privacy) section of this catalog for more information on FERPA.

Right to Discuss Concerns with Department Heads/Chairs

Academic department heads are expected to incorporate student input into decisions affecting academic instruction, advising, and student learning assessment. This input usually takes form through departmental advisory committees and student evaluation of faculty members. Individual students, however, may make appointments with their department heads to discuss specific problems, plans, or suggestions.

Right to File a Grade Appeal

Instructors are responsible for stating clearly the instructional objectives of the course at the beginning of each term and for evaluating student achievement in a manner consistent with these objectives. Students are responsible for maintaining standards of academic performance established for each course in which they are enrolled. Instructors are responsible for determining and assigning final course grades. Graded examinations, papers, and other materials used as a basis for evaluating a student’s achievement will be available to the student for inspection and discussion.

Students may appeal instructors’ grading decisions. The burden of proof, however, rests with the student. More information is available in Grading.

Right to File a Complaint

CSU is committed to treating all students fairly and respectfully. CSU’s policies that apply to students are published annually in the General Catalog, in addition to those found in other resources from individual departments and offices. In an instance of perceived violation of a CSU policy, a student may file a complaint in accordance with the Student Complaint Reporting (http://policylibrary.colostate.edu/policy.aspx?id=603) policy.

When a student encounters a problem on campus that he or she does not know how to resolve, he or she should always try to work the problem out by first discussing it with those involved. Dealing with concerns in the most direct and honest fashion should always be the first step toward resolution. Many problems are resolved when a student makes an appointment with a faculty or staff member and calmly and honestly communicates their concerns.

If, however, an issue or problem still exists, a student may initiate the formal complaint procedures at CSU. All formal complaints must be put in writing and must be signed by the student (including electronic or digital facsimile signatures clearly attributable to the student—for example, the student’s name in an email message received from his or her CSU email account). A Student Complaint Form is provided as a tool for presenting a written complaint, but is not required.

Procedures for Filing a Written Complaint

1. Attempt an informal resolution of the matter as noted above.
2. Complete the Student Complaint Form and mail, email, or deliver it to the VPSA by mail, email, or campus delivery to:
   Vice President for Student Affairs
   Attn: Dean of Students
   201 Administration Building
   8004 Campus Delivery
   Fort Collins, CO 80523-8004
   email: VPSA@colostate.edu
   Tel: (970) 491-5312
   Fax: (970) 491-7025

The VPSA Office will notify you with an acknowledgement that the complaint was received.

NOTE: All Student Complaints must be submitted in writing. A complaint reported by telephone will not be considered as submitted for review.

Complaint Review and Resolution Process

The VPSA Office is not an advocate for any party to a dispute but is an advocate for a fair process. Acting as a neutral, third party, the Dean of Students or her or his designee will first attempt to resolve the complaint by working with the student and the appropriate CSU employees and officials to assure a fair process. The Dean of Students may refer the matter to the Student Resolution Center for assistance in attempting an informal resolution. This assures that the complaint is considered by the appropriate officials and receives an impartial review.

If the matter is not able to be resolved informally, the Dean of Students will forward the complaint to the appropriate CSU Vice President or other official for further review and attempt to resolve the matter. If the matter is still not resolved to the Student’s satisfaction, the Dean of Students will help identify other resources that may be available to the Student including any appeals that may be available from agencies external to CSU, including the Colorado Department of Higher Education (CDHE) and Higher Learning Commission (HLC). Contact information for these agencies is provided in the full policy document (http://policylibrary.colostate.edu/policy.aspx?id=603).

The complete policy and procedures for filing a student complaint is available through the Policy Library (http://policylibrary.colostate.edu).

Right to Seek Membership in Student Organizations

CSU officially recognizes a great variety of student organizations. Policies established by the Board of Governors prohibit any recognized student organization from excluding students from membership on the basis of race, age, creed, color, religion, national origin, ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity or expression, or pregnancy.

All recognized student organizations must assure CSU that their membership policies and procedures are in compliance with this policy. Local chapters of regional, national, or international organizations must assure CSU that membership policies of the parent organization do not require the local chapter to exclude any student from membership on the basis of race, age, creed, color, religion, national origin, ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity or expression, or pregnancy.
Victims' Rights

The University is committed to providing appropriate support and referrals to persons who have been the victims of crimes or violations of University Policy or the Student Conduct Code. A victim of another person's unlawful or prohibited actions may seek personal support, explore options, and report the incident.

Confidential services are available through the Victim Assistance Team (http://www.wgac.colostate.edu/support), University Counseling Center (http://health.colostate.edu/services/counseling-services), CSU Health Network (http://health.colostate.edu), and Student Legal Services (http://sla.colostate.edu). Other University agencies may be required by law and University policy to take appropriate action when notified. Victims may receive assistance from other appropriate University resources, such as relocation within or to campus housing; academic support services; notification of appropriate persons/agencies; and, at the victim's request, University cooperation in using University procedures to deter harassment or retribution.

Students are encouraged to report complaints of:

- Sexual harassment or discrimination to the Office of Equal Opportunity (http://oeo.colostate.edu);
- Crimes to the Colorado State University Police (http://police.colostate.edu);
- Violations of the University Conduct Code to residential staff (http://reshallpolicies.colostate.edu) or Student Resolution Center (http://conflictresolution.colostate.edu/home);
- Interpersonal and sexual violence to the Office of Support and Safety Assessment (http://www.supportandsafety.colostate.edu), Colorado State University Police (http://police.colostate.edu), and Victim Assistance Team (http://www.wgac.colostate.edu/support) (confidential resource);
- Violations of their right to free speech in the classroom directly to the instructor involved or the department chair or Student Resolution Center (http://www.conflictresolution.colostate.edu).

Sexual Misconduct Reporting Exemption: The University encourages reporting of sexual misconduct by the impacted party or others who are aware of sexual misconduct incidents. To encourage reporting, it is the practice of Student Resolution Center to not charge reporting parties for other, lesser violations of this Student Conduct Code that may be related to the sexual misconduct incident. For example, a student who may have been under the influence of drugs or alcohol at the time of experiencing or witnessing a sexual misconduct incident will not be charged with drug or alcohol violations in connection with the reported incident.

Resources

Students who have questions, concerns, or need assistance with application of rights listed above may contact the pertinent resource including: Student Resolution Center, Office of the Vice President for Student Affairs, Office of Equal Opportunity, Provost/Senior Vice President’s Office, or academic department office. If unclear as to which office to approach, begin with Student Resolution Center.

Students' Responsibilities

- CSU has twice been ranked among the nation's Top Character Building Institutions (http://www.news.colostate.edu/release.aspx?id=1943) by the Templeton Foundation. Through curricular and co-curricular programs, students at CSU develop knowledge and skills to engage as respectful citizens in a diverse society, recognize the implications of their many choices, and become ethically responsible individuals. The policies that follow reflect CSU's continuing commitment to uphold the highest standards of ethical responsibility and conduct.
  - Classroom Behavior
  - Student Health Insurance Requirement
  - First Year Residence Hall Requirement
  - Academic Integrity/Misconduct
  - CSU Student Conduct Code

Classroom Behavior

The classroom instructor is responsible for all classroom conduct, behavior, and discipline. CSU policy permits only enrolled students, persons authorized by the instructor, and administrative personnel to be admitted to instructional areas during scheduled periods. CSU policy and Colorado state law also prohibit all forms of disruptive or obstructive behavior in academic areas during periods of scheduled use or any actions which would disrupt scheduled academic activity. Use of classrooms and other areas of academic buildings during nonscheduled periods is permitted only in accordance with departmental, college, or CSU practices.

Any person or persons in unauthorized attendance or causing a disturbance during scheduled academic activity shall be identified by the instructor and asked to leave. Persons refusing such a request may be removed by the CSU police and are liable to legal prosecution and/or disciplinary action.

Student Health Insurance Requirement

Domestic students taking six or more resident instruction credits, and all INTO and international students enrolled in any credit level, are required to have health insurance. Eligible students will be automatically enrolled in the CSU Student Health Insurance Plan (http://health.colostate.edu/student-health-insurance) unless they waive coverage by showing proof of private health insurance.

First Year Residence Hall Requirement

Experience and research has demonstrated that students who live on campus adjust to college life faster, have higher GPAs, and are more likely to graduate than students who live off campus. For this reason, all newly admitted first-year students without previous college experience, who are single, under 21 years of age, and not living with their parents in the Fort Collins area, are required to live their first two consecutive semesters in a residence hall (http://reshallpolicies.colostate.edu/residence-hall-contract-guidelines). Credits taken concurrent with high school and/or credits attained through Advanced Placement (AP) do not apply toward living experience.

Academic Integrity/Misconduct

The foundation of a university is truth and knowledge, each of which relies in a fundamental manner upon academic integrity and is
diminished significantly by academic misconduct. Academic integrity is conceptualized as doing and taking credit for one's own work. A pervasive attitude promoting academic integrity enhances the sense of community and adds value to the educational process. All within the University are affected by the cooperative commitment to academic integrity.

Faculty/instructors shall work to enhance a culture of academic integrity at the University.

Each course faculty member/instructor shall clearly state in his or her course syllabus that the course will adhere to the Colorado State University General Catalog Academic Integrity Policy and Student Conduct Code. In addition, by the end of the second week of classes and/or in the syllabus, the faculty member/instructor shall address academic integrity as it applies to his or her course by providing guidelines about course elements for the students.

Each course faculty member/instructor shall provide the opportunity for students to sign an affirmative honor pledge on any course components of the faculty/instructor's choosing. The honor pledge shall include one of the following statements and may be expanded according to faculty/instructor's, department, or college practices and policies:

HONOR PLEDGE: I have not given, received, or used any unauthorized assistance.

HONOR PLEDGE: I will not give, receive, or use any unauthorized assistance.

A course faculty member/instructor may offer the student the opportunity to write out the pledge if deemed practicable. Students may be given the opportunity to include an honor pledge along with electronic submissions of their work. A student's decision to forego signing the honor pledge shall not be used as evidence of academic misconduct and shall not negatively impact a student's grade.

Academic misconduct (see examples below) undermines the educational experience at Colorado State University, lowers morale by engendering a skeptical attitude about the quality of education, and negatively affects the relationship between students and faculty/instructors.

Faculty/Instructors are expected to use reasonably practical means of preventing and detecting academic misconduct. Any student found responsible for having engaged in academic misconduct will be subject to academic penalty and/or University disciplinary action.

Students are encouraged to positively impact the academic integrity culture of CSU by reporting incidents of academic misconduct.

Examples of academic misconduct include (but are not limited to):

1. Cheating – Cheating includes using unauthorized sources of information and providing or receiving unauthorized assistance on any form of academic work or engaging in any behavior specifically prohibited by the instructor in the course syllabus or class presentation. Examples include copying the work of another student on an exam, problem set, or quiz; taking an exam or completing homework for another student; possessing unauthorized notes, study sheets, answer codes, programmed calculators, or other materials during an exam; and falsifying exams or other graded paper results.

2. Plagiarism – Plagiarism includes the copying of language, structure, images, ideas, or thoughts of another, and representing them as one's own without proper acknowledgment, and is related only to work submitted for credit. Examples include the failure to cite sources properly (sources must always be appropriately referenced, whether the source is printed, electronic or spoken); submission of purchased research papers or homework as one's own work; and paraphrasing and/or quoting material without properly documenting the source.

3. Unauthorized Possession or Disposition of Academic Materials – Unauthorized possession or disposition of academic materials includes the unauthorized selling or purchasing of examinations, term papers, or other academic work; stealing another student's work; and using information from or possessing exams that an instructor did not authorize for release to students.

4. Falsification – Falsification encompasses any untruth, either verbal or written, in one's academic work. Examples include receiving unauthorized assistance or working as a group on a take-home exam, independent exam, or other academic work without authorization, or lying to avoid taking an exam or turning in other academic work. Furthermore, falsification of any University document is a violation of academic integrity. Examples include student identification numbers, transcripts, grade sheets, credentials, University status, or letters of recommendation. Forging a signature is another specific example of falsification.

5. Facilitation of any act of Academic Misconduct – Facilitation of any act of academic misconduct includes knowingly assisting another to commit an act of misconduct. Examples include knowingly discussing specifics of the content of a test or examination you have taken with another student who has not yet taken that test or examination or facilitating, by sharing one's own work, a student's efforts to cheat on an exam or other academic work.

(Academic Integrity policies appear in the Graduate and Professional Bulletin, the Faculty and Administrative Professional Manual, and the Honor Code of the Professional Veterinary School and the School of Public Health as applicable.)

**Procedures for Dealing with Academic Misconduct**

Faculty/Instructors are expected to use reasonably practical means of preventing and detecting academic misconduct. If a faculty member/instructor has evidence that a student has engaged in an act of academic misconduct in his or her course, prior to assigning any academic penalty, the faculty member/instructor shall notify the student of the concern and make an appointment with the student to discuss the concern. The student shall be given the opportunity to give his or her position on the matter. After being given the opportunity, if the student admits to engaging in academic misconduct, or if the faculty member/instructor judges that the preponderance of evidence supports the allegation of academic misconduct, the faculty member/instructor may then assign an academic penalty. Examples of academic penalties include assigning a reduced grade for the work, a failing grade in the course, removing the Repeat/Delete option for that course, or other lesser penalty as the faculty member/instructor deems appropriate. The faculty member/instructor shall notify the student in writing of the infraction and the academic penalty to be imposed. A copy of this notification shall be sent to Student Resolution Center.

Faculty/instructors have a responsibility to report to Student Resolution Center all cases of academic misconduct in which a penalty is imposed. Incidents which the faculty member/instructor considers major infractions (such as those resulting in the reduction of a course grade or failure of a course) should be accompanied by a recommendation that a hearing be conducted to determine whether additional university disciplinary action should be taken.
If the student disputes the decision of the faculty member/instructor regarding alleged academic misconduct, he or she may request a hearing with Student Resolution Center. The request must be submitted or postmarked, if mailed, no later than 30 calendar days after the first day of classes of the next regular semester following the date the grade for the course was recorded. If no appeal is filed within the time period, the decision of the faculty member/instructor will be final.

If, after making reasonable efforts, the faculty member/instructor is unable to contact the student or is unable to collect all relevant evidence before final course grades are assigned, he or she shall either:

1. Assign an interim grade of Incomplete and notify the student in writing of the reason for this action; or
2. Refer the case to Student Resolution Center for a hearing before deciding on a penalty.

A hearing will be conducted with Student Resolution Center to determine whether a preponderance of evidence exists in support of the allegations of academic misconduct. If the Hearing results in a finding of insufficient evidence to support the allegation or clears the student of the charges, the faculty/instructor will determine a grade based on academic performance and without reflection of the academic misconduct charge and change any previously assigned grade accordingly. If the Hearing results in finding of academic misconduct, the Hearing Officer and faculty member/instructor will confer regarding appropriate sanctions. The faculty member/instructor will make the final determination regarding academic penalties, which may include, among other options, assigning a reduced grade for the course, assigning a failing grade in the course, removal of the Repeat/Delete option for that course, or other lesser penalty as the course faculty/instructor deems appropriate. The Hearing Officer will make the final determination regarding University disciplinary sanctions.

In a case of a serious incident or repeat offense of academic misconduct that is upheld through a hearing, the Hearing Officer and the faculty member/instructor shall decide whether the student’s transcript will be marked with a notation of “AM,” which will be explained on the student’s transcript as a “finding of Academic Misconduct.” A notation of “AM” will be made on the student’s transcript only if the Hearing Officer and the faculty member/instructor agree that this penalty should be imposed.

Grades marked on the student’s transcript with the designation “AM” will not be eligible for the Repeat/Delete Policy.

Information about incidents of academic misconduct is kept on file in the Student Resolution Center office. No further action is initiated unless the incident constitutes a major infraction, the student has a prior record of University infractions, or there are subsequent reports of misconduct.

CSU Student Conduct Code

The Student Conduct Code (http://www.conflictresolution.colostate.edu/conduct-code) exists to notify students, faculty, and staff of the specific expectations Colorado State University holds related to student behavior and the rights and responsibilities that accompany being a student and participating in student clubs or organizations.

Colorado State University expects students to maintain standards of personal integrity in harmony with its educational goals; to be responsible for their actions; to observe national, state, local laws, and University regulations; and to respect the rights, privileges, and property of other people.
Colorado State University reserves the right at any time, without notice, to change, modify, or cancel any course, program, procedure, policy, financial requirement, or disciplinary arrangement set forth in this catalog whenever, in its sole discretion, it determines such action to be appropriate. Furthermore, Colorado State University will not be responsible for any failure to present or complete any course or program mentioned in this catalog. Since changes may occur at any time, students must check the relevant website (as noted on various pages in this catalog).

- Glossary
- Catalog Updates

### Glossary

This glossary defines terms to assist users to better understand content in the General Catalog.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's Degree</td>
<td>An award conferred by CSU signifying that the recipient has satisfactorily completed a minimum of 120 credit hours in an undergraduate course of study.</td>
</tr>
<tr>
<td>Catalog Updates</td>
<td>The General Catalog is published once annually prior to the beginning of the fall term. Changes made to policy or curriculum after publication that are effective in the catalog year (spring or summer terms) will be noted in the Catalog Updates section of the General Catalog (left navigation bar under “About the Catalog”).</td>
</tr>
<tr>
<td>Certificate - Graduate</td>
<td>A Graduate Certificate is used to identify the successful completion of a focused area of study deemed important to a student’s career objectives. A Graduate Certificate consists of a minimum of 9 specified credits, and not more than 15 credits at the 500 level or above.</td>
</tr>
<tr>
<td>Certificate - Undergraduate</td>
<td>An Undergraduate Certificate is used to identify the successful completion of a focused area of study deemed important to a student’s career objectives. Certificates are an option and are offered by certain departments. An undergraduate certificate consists of a minimum of 9 specified credits, and not more than 15 credits. A minimum of 9 credits must be course work at the upper-division level (300-400).</td>
</tr>
<tr>
<td>CEU</td>
<td>Continuing education unit (CEU) or continuing education credit (CEC) is a measure used in continuing education programs, particularly those required in a licensed profession, for the professional to maintain the license.</td>
</tr>
<tr>
<td>Concentration</td>
<td>A concentration is a sequence of at least 12 semester credits of designated courses within a major designed to accommodate specific interests of undergraduate students.</td>
</tr>
<tr>
<td>Credit</td>
<td>Unit that gives weight to the value, level or time requirements of an academic course taken at CSU.</td>
</tr>
<tr>
<td>Credit hour</td>
<td>A credit hour is defined as 50 minutes of lecture or discussion/recitation per week for 16 weeks (800 minutes in a semester), 100 minutes of laboratory per week for 16 weeks (1600 minutes in a semester) when outside preparation is required, or 150 minutes of laboratory per week for 16 weeks (2400 minutes in a semester) when no outside preparation is required.</td>
</tr>
<tr>
<td>Credit load</td>
<td>For workload planning purposes (and to graduate with 120 credits in eight semesters), students should plan on an average of 15 credits per semester and should expect that each credit hour will require approximately two to three hours (for some students in some classes, more time and in a few classes less time) of effort per week to attend classes and to accomplish readings and out-of-class assignments in preparation for successful completion of the course requirements.</td>
</tr>
<tr>
<td>Degree</td>
<td>An academic degree is the recognized completion of studies at CSU. A diploma is issued in recognition of having satisfactorily completed the prescribed course of study.</td>
</tr>
<tr>
<td>Degree Completion Program</td>
<td>Selected undergraduate majors offered by CSU, student usually transfers in 60 credits from another institution(s) and completes the degree at CSU.</td>
</tr>
<tr>
<td>Diploma</td>
<td>An academic credential issued by CSU signifying the recipient has successfully completed a particular course of study, which confers the degree.</td>
</tr>
<tr>
<td>Faculty - Instructor</td>
<td>Initial rank usually given to faculty members who have yet to complete the terminal degree (e.g., doctorate).</td>
</tr>
<tr>
<td>Faculty - Assistant Professor</td>
<td>A college or university faculty member early in their career, quality performance may lead to advancement to associate professor.</td>
</tr>
<tr>
<td>Faculty - Associate Professor</td>
<td>A college or university faculty member whose performance in teaching, research and scholarly activities, and service has advanced to associate professor.</td>
</tr>
<tr>
<td>Faculty - Full Professor</td>
<td>Faculty member who has attained the rank of professor (may be referred to as 'full professor') and is recognized for accomplishments at CSU, nationally, and internationally in their field.</td>
</tr>
<tr>
<td>Grade mode - Instructor Option</td>
<td>Allows the instructor to choose and inform the class whether Traditional or (S/U) Satisfactory/Unsatisfactory grading will be used for a course.</td>
</tr>
<tr>
<td>Grade mode - Student Option</td>
<td>Either Traditional or Satisfactory/Unsatisfactory grading selected by the student at the time of registration</td>
</tr>
<tr>
<td>Grade mode - Satisfactory/Unsatisfactory</td>
<td>Performance equivalent to a grade of C or better is recorded as Satisfactory. Performance equivalent to D or F is recorded as Unsatisfactory. Neither S or U grades are used in calculating the CSU GPA.</td>
</tr>
</tbody>
</table>
Grade mode - Traditional

Uses letter grades A to F. Instructor has the option to use pluses (+) or minuses (−) as indicated in the catalog section on Grading.

Graduate level

Degrees at the masters, doctorate or professional level. Graduate level courses are those numbered 500 and above.

Incomplete (grade)

Used when circumstances prevent student from completing course work, agreement to be made with instructor for completion. I grade converts to F if not completed within one year.

Independent Study

Individualized learning not available in courses, which allows a student to work independently with the approval and guidance of a supervising instructor for predetermined credits.

Interdisciplinary Studies Program

Graduate level program that is intra-college (within one college) or intra-university (across disciplines of more than one college). They are a series of courses focused on a particular problem or area of concern providing multi-disciplinary perspectives.

Licensure–teacher/educator

A series of courses including student teaching preparing students to be PK-12 teachers/educators. CSU in cooperation with the state offers credentials in areas listed in the School of Education section. Undergraduate students major in a discipline (e.g., Music, Agriculture, Early Childhood, Chemistry).

Major

A sequence of courses in an academic discipline or area, which when accompanied by appropriate supporting courses, leads to an undergraduate degree.

Major Completion Map

A semester-by-semester course plan that enables students to complete their baccalaureate degree within the minimum number of semesters indicated in the major. A planning tool to guide the student and the advisor.

Minor

A sequence of related courses (minimum of 21 credits), which provide a student with unique opportunities to complement the major. Minors may be disciplinary (e.g., economics, range ecology) or multidisciplinary (arts leadership and administration, gerontology) and are offered only at the undergraduate level.

Option

A sequence of courses within a major or concentration of either guided electives or electives selected from areas of interest as approved by the department.

Prerequisite

A course(s) and or minimum grade requirement that must be completed to be prepared for the next course or sequence of courses.

Program of Study

Content and scope of knowledge, abilities, and skills a student is expected to master in a field of study, as well as the content and topics that are studied at each level.

Restriction

Conditions that apply to courses at the section level to limit registration in a course. Restrictions include department approval, field of study, college, student level, student class, campus location and/or student attribute.

Second Baccalaureate Degree

Enrollment classification for students who have earned one or more bachelor's degrees. An option when one is changing fields or careers.

Special Academic Unit–SAU

Multidisciplinary units (across departments) with courses and/or programs addressing complex problems and issues (e.g., sustainability, biomedical engineering).

Specialization

A recognized area of specialty within a graduate program. Graduate degrees may or may not have specializations. Specializations are identified on the transcript.

Transcript - Official

Official copy of a student’s permanent academic record at CSU, which includes all CSU courses taken, grades received, honors (Dean’s List, graduation with distinction), and degrees conferred.

Undergraduate

A student at CSU pursuing a bachelor's degree program (usually 4 years).

Undergraduate - Freshman

0-29 earned credits at CSU and accepted in transfer.

Undergraduate - Sophomore

30-59 earned credits at CSU and accepted in transfer.

Undergraduate - Junior

60-89 earned credits at CSU and accepted in transfer.

Undergraduate - Senior

90+ earned credits at CSU and accepted in transfer.

Catalog Updates

For New Courses approved for Spring 2017 after August 1, 2016 please see the Spring 2017 Class Schedule. Experimental Courses for the 2016-2017 Academic Year can also be found in the Class Schedule. The Class Schedule may be accessed through RAMweb or ARIESweb.

Updates

Update to Personal and Living Expenses (September 2016)

Housing Deposit

Residence Halls

The $350 housing deposit for residence hall students serves as both a reservation fee and a contractual guarantee. A partial refund of this deposit is available if the applicant cancels his/her request prior to the date the residence halls open for the semester. For specific information about the refund policy, refer to the “Housing Deposit & Refund Information” outlined in the Housing Guide or on the Housing & Dining Services website (http://housing.colostate.edu).

University Apartments
A $340 application deposit is required for students applying for university apartments (after Nov. 1, 2016 - $350). This deposit will convert to a damage/cleaning deposit at the time of assignment. The deposit will be refunded any time prior to confirming an apartment assignment, upon request. The refund procedure for current apartment residents is outlined in the Apartment Life Housing Agreement. For further information, refer to the Housing Guide or the Housing & Dining Services website (http://housing.colostate.edu).

**Graduate and Professional Bulletin Updates**

Faculty Council approved the changes to the continuous registration policy on September 6, 2016. This modification is found on page 11 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved the addition of the Student Conduct Code to the Graduate and Professional Bulletin. This addition was approved on October 4, 2016 and is found on page 10 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

Faculty Council approved modifications to the Evaluation of Graduate Students. These changes were approved on October 4, 2016 and are found on page 10 of the Faculty Council minutes (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes).

**Curriculum Additions**

The following Graduate Certificates were approved on the Faculty Council minutes and have been added to the General Catalog:

- Graduate Certificate in Applied Global Stability: Agriculture (05/03/16 FC approval)
- Graduate Certificate in Applied Global Stability: Natural Resources (05/03/16 FC approval)
- Graduate Certificate in Applied Global Stability: Water Resources (05/03/16 FC approval)
- Graduate Certificate in French Linguistics and Literary Studies (05/03/16 FC approval)
- Graduate Certificate in Gender, Power and Difference (05/03/16 FC approval)
- Graduate Certificate in Military and Veteran Culture (05/03/16 FC approval)
- Graduate Certificate in Spanish Linguistics and Literary Studies (05/10/16 FC approval)

**Corrections**

Updated the Business Administration (BUSA-BS) Core to list courses alphanumerically. Corrected the remaining AUCC 3B requirement listed under “AUCC Non-Specified Courses” from 6 to 3 credits. This requirement is listed correctly as 3 credits in each of the BUSA-BS Concentrations. (10/17/2016)

HORT-VTEZ-BS: Major in Horticulture, Viticulture and Enology concentration: 4B removed from HORT 460/SOCR in Senior year in POS. Major Completion Map correction –4B removed from HORT 460/SOCR AND added 4B HORT 462 to match program requirements (Senior Semester 7). (10/20/16)

ECSS-BS: Major in Ecosystem Science and Sustainability: effective 11/21/14 UCC minutes NRRT 330 replaced NR 330 in Junior year program requirements. (10/20/16)
UNDERGRADUATE ADMISSIONS AND ENROLLMENT

Office of Admissions (http://admissions.colostate.edu)
University Welcome Center, Ammons Hall
(970) 491-6909, admissions@colostate.edu

All correspondence about undergraduate admissions should be addressed to the Office of Admissions, Colorado State University, 1062 Campus Delivery, Fort Collins, CO 80523-1062 or admissions@colostate.edu. Applicants are encouraged to include their full name and date of birth or CSU ID when corresponding about application status.

Students interested in graduate admission should consult the Graduate School information and should contact the key advisor(s) in the academic department(s) (http://graduateschool.colostate.edu/prospective-students/degrees.aspx) being considered.

CSU Board of Governors and Undergraduate Admissions Standards

The following undergraduate admissions information reflects minimum requirements that may be subject to change after the General Catalog has been published. The Board of Governors of the Colorado State University System (http://csusystem.edu) reserves the right to deviate from published admission requirements. In such cases, changes in admission policy will be publicized.

CSU’s Philosophy of Undergraduate Admission

CSU is committed to a holistic review process that takes into consideration a wide range of factors, such as past academic course work and achievement, test scores, essay, leadership qualities, school and community service, recommendations, geographic residence, first generation status, and ability to contribute to a vibrant and diverse campus community. We strive to carefully craft our student body in order to meet our enrollment goals, embody our institutional Land Grant mission, and create a compelling learning environment.

CSU actively seeks academically qualified individuals with varied backgrounds, perspectives, and goals who demonstrate the potential to attain a degree from Colorado State University. Because CSU receives more applications than it can honor and because our commitment to diversity is an important educational objective, the admission evaluation process and our admission decisions reflect and rest upon the range of factors outlined above.

- General Policies for Undergraduate Admission
- Undergraduate Applicant Definitions
- Undergraduate Profiles and Decision Factors
- How to Apply
- International Undergraduate Admission
- Enrollment Deposit
- Transfer and Test Credit

General Policies for Undergraduate Admissions

Final Transcript Required
Admission is provisional until we receive a final, official transcript reflecting completion of all course work and proof of graduation or degree completion (as applicable).

High School Graduation (or Equivalent) Required
Freshman/First-Year applicants and Transfer applicants with fewer than 60 credits in transfer must demonstrate high school graduation or equivalent prior to enrolling at CSU. Financial Aid is not released without proof of high school graduation or equivalent, and a hold is placed on course registration prior to the start of the second semester for freshman/first-year students who have not demonstrated high school graduation (or equivalent).

Good Standing Requirement and Honor Code Requirement

Applicants for admission to CSU whose records indicate they are under judicial or disciplinary censure generally are not reviewed for a decision until they have been cleared through a pre-admission review by Conflict Resolution and Student Conduct Services (http://www.conflictresolution.colostate.edu).

Submission of the application for admission requires acknowledging that all information shared in the application is true and correct. Students who knowingly falsify application information, transcripts, or test scores, or who fail to indicate all previously attended institutions or student conduct history are subject to rejection or dismissal. If applicable, sponsoring agencies are informed of this decision.

Selective Service Registration

In compliance with C.R.S. 23-5-118, Selective Service registration is required of male United States citizens between the ages of 17 years and 9 months and 26 years who wish to enroll at Colorado institutions of higher education. Individuals providing false information are subject to penalty of law and disenrollment.

Immunization Requirement

CSU, in compliance with Colorado State laws and Health Department regulations, requires persons born January 1, 1957 or later to show proof of two vaccinations for measles and mumps, and one vaccination for rubella (MMR) or to show written evidence of laboratory tests showing immunity.

Colorado law, Colo. Rev. Stat. § 23-5-128, also requires every student residing in student housing to fulfill two requirements for Meningococcal Vaccine:

1. Access the CSU Health Network Portal (http://www.health.colostate.edu) to sign a statement that the student has reviewed the Meningococcal Disease Information Document, which describes meningococcal disease and the vaccine that can prevent the disease.
2. Indicate whether student a) received the Meningococcal Vaccine, b) plans to have the vaccine administered, or c) is “waiving” the requirement and declining to receive the vaccine.

Submit immunization records or laboratory results to the CSU Health Network prior to arrival at school. Additional information concerning immunization should be directed to:

Immunizations Office
CSU Health Network
Immunizations Clinic
8031 Campus Delivery
Colorado State University
Fort Collins, CO 80523-8031 CSUHN_immunize@mail.colostate.edu
Phone: (970) 491-6548, Fax: (970) 491-0268

Undergraduate Applicant Definitions
The following definitions apply to all U.S. citizens, permanent residents, and international applicants. The International Admission section includes additional details specific to international applicants and U.S. citizens/permanent residents educated outside the U.S.

- Freshman/First-Year Students
- Transfer Students
- Second Bachelor’s/Post-Bachelor Candidates
- Returning Students

Freshman/First-Year
You are a Freshman/First-Year applicant if you have never taken college course work OR your only college course work was completed during high school (or homeschool) and prior to high school graduation or equivalent.

- Refer to instructions for dual/concurrent enrollment if you’ve taken college course work during or as your high school curriculum.
- Details for students who did not graduate from high school, homeschooled, graduated early, or completed an online high school diploma are below.
- The admission decision for transfer applicants with fewer than 30 post-high school credits at the point of application includes consideration of the high school record according to these factors.

Refer to the freshman application guide (http://admissions.colostate.edu/futurefreshmenhowtoapply) on the Admissions website for details.

Specialized Freshman/First-Year Populations
This information applies to freshman/first-year applicants and transfer applicants with fewer than 30 post-high school credits at the point of application.

Dual/Concurrent Enrollment Applicants
See the Admissions website for dual/concurrent enrollment applicants (http://admissions.colostate.edu/dual-enrollment).

Applicants whose only college course work has been completed during or as their high school curriculum are considered freshman/first-year applicants with dual/concurrent enrollment.

While high school credentials still are the primary basis for the admission decision for dual/concurrent enrollment students, college performance can be considered in the admission decision, and courses will be evaluated for advanced-standing credit after an applicant is otherwise deemed admissible.

Dual/concurrent enrollment students are eligible for freshman/first-year scholarships and are required to live in the residence halls.

Non-High School Graduates
See the Admissions website for Non-High School Graduates (http://admissions.colostate.edu/ged).

We’re committed to making an exceptional college education accessible to students from a wide range of backgrounds. Differences in educational background are a welcome part of the mix. Students who did not graduate from high school (or complete via homeschooling) are welcome to apply with evidence of high school equivalency earned through GED, HiSet or TASC as part of a Complete Application. To be eligible for admission, non-high school graduates must present qualifying high school equivalency test results in addition to demonstrating other evidence of academic readiness through transcript(s), ACT/SAT results (if applicable), and support documents.

Applicants who have completed a state-approved completion exam other than the GED, HiSet or TASC are evaluated on a case-by-case basis.

Note: For transfer applicants with more than 30 but fewer than 60 college-credits completed since earning high school equivalency, GED/HiSet/TASC is used for verification of completion only; scores are not considered in the admission decision.

Homeschooled Applicants
See the Admissions website for homeschooled applicants (http://admissions.colostate.edu/homeschool).

Homeschooled applicants are welcome at CSU and are evaluated for admission according to general CSU admission criteria; there are no special requirements for applicants who have homeschooled.

We recognize that homeschooling can allow for customized teaching methods, curricula, and learning environments that may differ from “traditional” education models. Our holistic review process is designed to accommodate unique backgrounds as long as we can assess core academic factors in our review of credentials.

Your homescool transcript can take any form as long as we can determine 1) how you completed the recommended high school course work (http://admissions.colostate.edu/18units) and 2) how you were graded, assessed, or considered to have “mastered” content to move on in your chosen curriculum. If you did not follow a traditional academic calendar or age-based instruction, if you were not assessed using traditional letter or percentile grades, or if you have otherwise customized your homeschool experience so that something other than a traditional transcript with courses and grades is necessary to understand your college preparation, we encourage you to include with your application a description of the learning environment, a list of courses and brief statement about course content, and an explanation of how your content-mastery was assessed.

Be sure to reference information for dual/concurrent enrollment applicants if you are using college enrollment as your homeschool curriculum (i.e., completing community college work as your junior/senior year equivalent).


Early Graduates
See the Admissions website for early high school graduates (http://admissions.colostate.edu/early-graduates).

Freshman applicants who complete high school in fewer than four years are evaluated for admission according to general CSU admission criteria. Admission preference is given to students who maximize their high school experience by taking accelerated and/or academically rigorous course work such as Advanced Placement, International Baccalaureate and/or dual enrollment college courses in order to satisfy the recommended high school course work (http://admissions.colostate.edu/18units).

Whether you are graduating high school one semester or one year early, fall entrance is strongly recommended. Students who leave high school one semester early are not eligible for spring semester entry if the high school only allows for May/June graduation.

Online High School Students
See the Admissions website for online high school students (http://admissions.colostate.edu/online-high-school).

Applicants who complete all or part of their high school curriculum online are evaluated for admission according to general CSU admission criteria. Admission preference is given to students who maximize their high school experience by taking accelerated and/or academically rigorous course work such as Advanced Placement, International Baccalaureate and/or dual enrollment college courses in order to satisfy the recommended high school course work (http://admissions.colostate.edu/18units), so online high school completion programs that include strong college-prep rigor are encouraged.

While we are flexible in our recognition of online high school completion programs and do not require a specific type of accreditation, regional accreditation typically is a good indication of alignment with our admission criteria.

Transfer Students
You are a Transfer applicant if you have enrolled in any amount of college-level course work at a regionally-accredited college/university after high school graduation or equivalent. If you have completed 30 or fewer post-high school college credits at the point of application, the admission decision also will include consideration of your high school credentials. Learn more about Transfer and Test Credit here.

Refer to the transfer application guide (http://admissions.colostate.edu/transferstudentshowtoapply) on the Admissions website for details.

Second Bachelor’s/Post-Bachelor Candidates
You are a Second Bachelor’s/Post-bachelor applicant if you will have completed a full bachelor’s/undergraduate degree before enrolling in a new undergraduate degree program at CSU.

Refer to the second bachelor’s application guide (http://admissions.colostate.edu/secondbachelorsapplicants) on the Admissions website for details. (Note that if your first/prior undergraduate degree was completed at CSU and you are applying to a begin a new undergraduate degree at CSU, you’ll apply using the Returning Student application.)

Returning Students
You are a Returning Student if you previously attended CSU as an admitted, degree-seeking undergraduate student and wish to resume studying at CSU as an admitted, degree-seeking undergraduate student.

Refer to the returning student application guide (http://admissions.colostate.edu/returningstudents) on the Admissions website for details. (Refer to the second bachelor’s application guide (http://admissions.colostate.edu/secondbachelorsapplicants) if you will be applying to start a new undergraduate degree.)

Undergraduate Profiles and Decision Factors
- Freshman/First-Year Profile and Decision Factors
- Transfer Profile and Decision Factors
- Second Bachelor/Post-bachelor Decision Factors
- Returning (Former) CSU Student Decision Factors
- English Proficiency Requirement
- Students with Disabilities

How we review each application packet and render an admission decision is informed by CSU’s undergraduate admission philosophy. Every incoming class looks different, but we always work to maintain high academic standards while providing access to higher education as part of our land-grant mission.

Freshman/First-Year Profile and Decision Factors
Fall 2015 freshman class profile
The class profile reflects the middle 50 percent of freshmen admitted in Fall 2015. That means students were admitted with credentials distributed on either side of the range presented, which should give a general sense of admissibility.

Middle 50% GPA: 3.2-3.9 (4.0 scale)
Middle 50% ACT Composite: 23-28
Middle 50% SAT CR/M Combined*: 1050-1250

*These reflect scores on the version of the SAT that was administered through February 2016.

Higher Education Admission Requirements (HEAR) and CSU’s Recommended High School Course Work Minimums
To be considered for admission, freshman/first-year applicants and transfers with fewer than 30 post-high school credits are advised to complete at least 18 high school units (http://admissions.colostate.edu/18units) to meet the Colorado Department of Higher Education HEAR guidelines and institutional course work recommendations (1 unit = 1 year high school or 1 semester college).

The minimum passing grade is D; however, grades of D may not be competitive in a selective admission environment, and grades of C- or better are preferred.
Competitive Majors

A few undergraduate majors have more competitive entrance requirements (http://admissions.colostate.edu/competitive-majors) and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and early application is recommended.

Details about factors considered in the admission decision are in the freshman application guide (http://admissions.colostate.edu/futurefreshmenhowtoapply).

Transfer Admission Profile and Decision Factors

Fall 2015 Transfer Profile

The class profile reflects the middle 50 percent of transfers admitted in Fall 2015. That means students were admitted with credentials distributed on either side of the range presented, which should give a general sense of admissibility.

Middle 50% Transfer GPA: 2.8-3.5 (4.0 scale)
Middle 50% Transfer Credits: 28-67

To be considered for admission, transfer applicants must present a minimum cumulative GPA of 2.00 (4.000 scale) from all institutions attended and must have completed the admission requirement in mathematics (http://admissions.colostate.edu/requirementsinmathematics). Completion of college composition is preferred but not required. Until a transfer applicant has more than 30 post-high school college credits complete, the admission decision also includes review of high school credentials according to our freshman/first-year admission guidelines.

According to federal financial aid requirements, ALL transfer applicants with fewer than 60 credits in transfer must demonstrate high school graduation (or equivalent). Because the formal transfer evaluation is not completed until after an applicant has been admitted, all transfer applicants are required to submit proof of graduation (or equivalent) as part of a Complete Application.

Competitive Majors

A few undergraduate majors have more competitive entrance requirements (http://admissions.colostate.edu/competitive-majors) and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and early application is recommended.

Second Bachelor/Post-bachelor Decision Factors

To be considered for admission, second bachelor/post-bachelor candidates must present a minimum cumulative GPA of 2.00 (4.000 scale) from all institutions attended. Applicants must be seeking a degree program that does not duplicate their first degree, and entering CSU as an undeclared student is not an option at this level. Details about factors considered in the admission decision are in the second bachelor’s application guide (http://admissions.colostate.edu/secondbachelorsapplicants).

Competitive Majors

A few undergraduate majors have more competitive entrance requirements (http://admissions.colostate.edu/competitive-majors) and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and early application is recommended.

Returning (Former) CSU Students

Comprehensive details for returning students are available in the returning student application guide (http://admissions.colostate.edu/returningstudents).

The admission decision for students returning to complete a degree in progress is based primarily on their previous CSU performance and their academic standing upon leaving CSU. Students who left the University in good academic standing generally are cleared to return without restrictions. Students who left the University in a probationary or dismissed status should refer to the Scholastic Standards Policy for additional information about qualifying to return to CSU.

Competitive Majors

A few undergraduate majors have more competitive entrance requirements and/or enrollment caps; entrance to these programs is limited to students presenting the strongest academic credentials, and early application is recommended. Returning students must have satisfied particular CSU course work and earned specific grades/GPA to be admitted to a major with competitive entrance requirements (http://www.undeclared.casa.colostate.edu/majors-with-entrance-requirements.aspx).

If you are returning to CSU to begin a second undergraduate degree, refer to the admission decision factors for second bachelor’s/post-bachelors (http://admissions.colostate.edu/secondbachelorsapplicants).

English Proficiency Requirement

Strong English language skills are important to academic success at CSU. To support student success, we require all students whose first language is not English to demonstrate a high level of English proficiency regardless of their citizenship. Applicants from Australia, Canada, Ireland, New Zealand, and the United Kingdom whose first language is English are exempt from this requirement.

TOEFL, PTE Academic or IELTS Academic results are the preferred indicators of English proficiency. For applicants seeking direct admission to CSU, the requirements are as follows:

<table>
<thead>
<tr>
<th>English Proficiency Exam</th>
<th>Clear Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOEFL IBT (Test of English as a Foreign Language)</td>
<td>79</td>
</tr>
<tr>
<td>Internet Based Test</td>
<td></td>
</tr>
</tbody>
</table>
TEMPERATURES OF A GAS AS A FUNCTION OF ITS VOLUME AND PRESSURE.
be disregarded. Failure to include all institutions previously attended is a serious offense that may result in the rescinding of admission, loss of credit, or disenrollment. Transcripts reflecting courses taken at vocational-technical institutes or colleges that are not regionally accredited can be helpful documentation and may be required, though they do not qualify an applicant for transfer applicant status or advanced-standing credit.

For freshman/first-year applicants: You may be required to submit an original, official college transcript at the point of application if your college enrollment is not otherwise reflected on your high school transcript, especially if college enrollment is being used as your full-time high school curriculum. Advanced standing credit (transfer credit) is only awarded from an original, official transcript. Please refer to College-Level Courses Completed by High School Students (http://catalog.colostate.edu/general-catalog/admissions/transfer-test-credit/#college-courses-high-school) for additional information.

Additional information may be requested as necessary for the full review of an applicant’s eligibility.

International Applicants: Additional Requirements

In addition to the documents outlined above, applicants who have completed part or all of their education outside of the US also may be required to submit the following:

- A certified English translation of any academic credentials not in English
- Evidence of English Proficiency (http://admissions.colostate.edu/internationalstudentshome/englishproficiency) through TOEFL, IELTS, or Pearson’s Test of English (PTE) to be considered for direct admission
- Financial support documentation and a copy of your passport if you will require visa documentation from CSU

Additional information may be requested as necessary for the full review of an applicant’s eligibility.

Application Deadlines

Students can begin their enrollment at CSU during the fall semester (August start), spring semester (January start) or summer term (May/June start; not recommended for first-year freshmen).

Future application terms generally open 10-12 months prior to the first day of classes for the term. Freshman/first-year applicants must have completed at least 75% of their high school curriculum (through junior year equivalent) before a decision can be rendered; transfer applicants must have no more than one academic term in progress when a decision is rendered. Second bachelor’s/post-bachelor candidates must be finished with their first degree or in their final term of enrollment with degree pending for a decision to be rendered.

Deadlines specific to each applicant type and term are reflected in the application guides (http://admissions.colostate.edu/applying-to-csu).

International Undergraduate Admissions

- Non-U.S. citizens educated outside of the U.S. who require a student visa to study in the U.S.
- Non-U.S. citizens educated outside of the U.S. who will NOT require a student visa to study in the U.S.
- Non-U.S. citizens/Non-Permanent Residents educated inside the U.S.
- U.S. Citizens/Permanent Residents Educated Overseas
- English Proficiency

Non-U.S. citizens educated outside of the U.S. who require a student visa to study in the U.S.

- Submit documents listed on the application checklist according to your applicant type (e.g., freshman, transfer) by the posted deadline.
- You will be required to demonstrate English proficiency to be considered for direct admission.
- Admitted students must submit the appropriate immigration forms, financial support documentation and a copy of their passport to International Student and Scholar Services (ISSS) before visa documentation is issued.
- Contact ISSS (http://isss.colostate.edu) for instructions regarding international student orientation and check-in.

Non-U.S. citizens educated outside of the U.S. who will NOT require a student visa to study in the U.S.

- Submit documents listed on the application checklist according to your applicant type (e.g., freshman, transfer) by the posted deadline.
- You will be required to demonstrate English proficiency to be considered for direct admission.
- Contact ISSS (http://isss.colostate.edu) for instructions regarding international student orientation and check-in.

Non-U.S. citizens/Non-Permanent Residents educated inside the U.S.

- Submit documents listed on the application checklist according to your applicant type (e.g., freshman, transfer) by the posted deadline.
- Include a copy of your visa with your application for admission (if applicable).
- You may be required to demonstrate English proficiency depending upon your academic credentials and length of time in the U.S.
- Students educated in the state of Colorado who are not U.S. Citizens or Permanent Residents may be eligible for in-state tuition under the Colorado ASSET legislation (http://sfs.colostate.edu/asset-1).
- No extra or unique requirements are in place for students who are undocumented in the U.S. to be eligible for admission consideration since admission is an academic decision.

U.S. Citizens/Permanent Residents Educated Overseas

CSU recognizes that the pool of U.S. citizens/Permanent Residents educated abroad covers a wide spectrum, including students with dual citizenship who have never been to the U.S., U.S.-born students who have lived in multiple countries or who have only recently moved overseas as the result of family military or employment assignments, and U.S. Permanent Residents with varied amounts of U.S.-based education.

Our holistic review process is designed to recognize and incorporate these kinds of unique experiences into our evaluation. You can follow the
Transfer and Test Credit

• College-Level Courses Completed by High School Students
• Advanced Placement (AP)
• College-Level Examination Program (CLEP)
• International Baccalaureate (IB)
• Cambridge Pre-U Examination
• Evaluation of Transfer Credit

College-Level Courses Completed by High School Students

CSU credit may be allowed for college-level courses completed at a college or university while a student is still in high school if the following conditions are met:

1. The college or university must be fully accredited by one of the seven regional associations of schools and colleges.
2. Credit will be granted only for academic courses with grades of C- or better.
3. An official transcript must be provided by the college or university listing the courses completed.
4. The course is not remedial or vocational/technical in content.

The College Board Advanced Placement Program (AP)

The Advanced Placement tests administered by The College Board are used by CSU to award credit and advanced placement in any of several fields in which a student may have participated in high school. Lower division credit (100-200) awarded is treated as transfer credit without a grade but is counted toward graduation and may be used in fulfilling specific lower division curriculum requirements.

The academic department responsible for the course in which test credit is granted will have determined what lower division equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for re-evaluation or an appeal of the decision will not be considered or accepted.

The exception to the re-evaluation process is limited to the Capstone Seminar and the Capstone Research components of the Advanced Placement offerings. The re-evaluation must be approved by the teaching department in which the Seminar and Capstone most closely align for consideration of a direct equivalency within the academic structure at CSU.

Lower division (100-200) credit may be granted for scores of three (3), four (4) or five (5) on individual Advanced Placement Tests. Scores of one (1) and two (2) are not granted credit. Please see the Registrar’s Office (http://registrar.colostate.edu/transfer-credit/ap-equivalencies-archive) and select “Advanced Placement (AP)” for a complete table indicating the courses for which credit is awarded.

Generic credit (no discipline identified) will be granted for the AP Capstone Seminar and/or the AP Capstone Research Project when a minimum score of four (4) is earned. The AP Capstone Seminar and the AP Capstone Research components may be re-evaluated by the teaching department in which the Seminar and Capstone most closely align for consideration of a direct equivalency of lower division credit. The department’s evaluation will be the final determination.

Please see the Registrar’s Office (http://registrar.colostate.edu/transfer-credit/transfer-other-credit) and select “Advanced Placement (AP)” for a complete table indicating the courses for which credit is awarded.
College-Level Examination Program (CLEP)

The College-Level Examination Program (CLEP) was designed by The College Board to enable both traditional and nontraditional students to receive college-level credit by examination. There are two types of examinations offered—the General Examinations and the Subject Examinations.

For general examinations, a minimum of three credits will be awarded for a score of 50 or higher. For subject examinations, credit will be awarded in the amount equivalent to the CSU course(s), for scores of 50 or higher. Go to the Registrar’s Office (http://registrar.colostate.edu/transfer-credit/transfer-other-credit) and select the tab “College-Level Examinations Program (CLEP)” for a complete table indicating those courses for which credit is awarded.

Information may be obtained and arrangements for taking the tests by contacting the University Testing Center (http://testing.colostate.edu), General Services Building, Room 203, at (970) 491-6498, or by visiting the CollegeBoard website (https://clep.collegeboard.org/test-takers/feedback). Credit awarded for these examinations cannot be used in meeting the CSU residency requirement for the baccalaureate degree.

The academic department responsible for the course in which test credit is granted determines what equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for re-evaluation or an appeal of the decision will not be considered.

International Baccalaureate (IB)

Students who graduate from high school with an International Baccalaureate diploma or have completed International Baccalaureate examinations may receive CSU credit for scores of four or higher.

The number of credits awarded for successful completion of an International Baccalaureate diploma program will be a minimum of 24 semester credits. If a score of less than four is received on an exam, the number of credits granted will be reduced accordingly if the student meets the necessary requirements.

The academic department responsible for the course in which test credit is granted determines what equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for re-evaluation or an appeal of the decision will not be considered.

See the Registrar’s Office (http://registrar.colostate.edu/transfer-credit/transfer-other-credit) and select the tab “International Baccalaureate” for a list of courses for which credit will be granted.

Cambridge Pre-U Exam

The Cambridge Pre-U examination is a United Kingdom qualification from the University of Cambridge International Examinations and is an alternative to the current A Level qualification. This exam consists of “Principal Subjects” of which students have a free choice of three of 27 subject options. Additional subjects may be taken and possibly considered for credit but are not incorporated into the Cambridge Pre-U Diploma. Those students who complete an “Independent Research Project” and a “Global Perspectives” portfolio along with the 3 “Principal Subjects” options are eligible for the award of the Cambridge Pre-U Diploma.

There are additional “short course” options consisting of one year’s study, available in Modern Foreign Languages and Mathematics. The ‘Global Perspectives and Research Report’ (GPR) may also be considered for credit on a case by case basis.

Credits may be used toward the 120 credit minimum requirement for graduation and may be used toward general education (All-University Core Curriculum) requirements. Scores of D1-D3, M1-M3 and P1-P3 will be considered for credit as they are equivalent to a “C” or better grade. A maximum of 36.0 semester hours may be awarded for Cambridge Pre-U exams.

The academic department responsible for the course in which test credit is granted will determine what equivalency will be awarded. Department decisions are considered the final determination of equivalency for the specific examination. Therefore, a request for re-evaluation or an appeal of the decision will not be considered or accepted.

Evaluation of Transfer Credit

The Registrar’s Office is responsible for determining course equivalencies for all courses that are presented for transfer to CSU. Students should be aware that credits may transfer to CSU, but not count toward department graduation requirements. Evaluation of credits is made only from official transcripts after a student has been granted admission.

If a student attends one or more regionally accredited 2-year institutions a total of 64 transfer credits may be accepted. There is no limit for the amount of credit that can be transferred from regionally accredited 4-year institutions.

Regular academic courses from institutions accredited by one of the six regional associations of schools and colleges completed with a grade of C- or better are generally accepted in transfer. Course work from institutions that are not regionally accredited will not be transferred. Coursework that is remedial or vocational/technical in nature will not be transferred. Transfer grades and credits are not computed within the cumulative GPA earned at CSU.

If coursework presented for transfer is over 10 years old, the academic department will need to review it for applicability towards degree requirements.

International institutions must be recognized by the country’s governmental agency for possible transfer of credits (i.e., Ministry of Education).

International Credit toward a Baccalaureate Degree

Transfer credit is generally only considered from international tertiary institutions that are recognized by the ministry of education, or a similar accrediting body, in the home country. In order to qualify for transfer credit, courses completed at recognized international tertiary institutions must be applicable to the student’s degree and comparable to the nature and quality of CSU courses.

International courses with the same or similar course titles as CSU courses may satisfy course requirements. An official or certified copy of the transcript must be presented to the Registrar’s Office for work to be officially evaluated for transfer credit. A certified translation must accompany transcripts not issued in English. The translation should be literal and not interpretive. If course content is not evident from course
titles on the transcript, students should be prepared to provide official
catalog course descriptions or syllabi (in English) from their schools or
faculties.

Rarely is international secondary level work considered for transfer credit.
The completion of rigorous secondary school subjects is expected of all
admission candidates-international and domestic alike. Transfer
credit is not awarded for secondary school subjects, unless an additional
13th year of secondary school was completed and/or a standardized
examination was administered. Examples might include the British
Advanced Level (A-Level) examinations, German Abitur examinations, or
Italian Maturita examinations.

In many cases, international credits will have to be converted into the
U.S. semester system unless there is an official CSU Memorandum
of Understanding (MOU) that allows for an alternate credit evaluation
option. In those cases where there is not an official MOU indicating an
alternate, a conversion factor will be used to determine the U.S. Credit
 equivalency for each course. No more than 15-18 semester hours per
term or 30-36 semester hours may transfer in any academic year. All
courses considered for transfer must be completed with a "C-" or better
grade. The Registrar's Office will determine the international grade
 equivalencies.

Transferology™

Students who have completed courses in higher education want to know
which colleges and universities will accept those courses and apply them
to a degree. Transferology (https://www.transferology.com/login.htm)™
will provide quick answers from hundreds of institutions in a streamlined
dynamic interface.

Transferology™ (formerly known as u.select) enables students, advisors,
faculty, and administrators from colleges and universities to obtain
consistent and accurate information about how courses will transfer from
one institution to another, and how courses will apply to meet academic
program requirements at the other institutions. A potential
student can have direct access to course acceptability, equivalency,
and applicability among all participating institutions by using each
institution's existing course equivalency tables. Course descriptions,
details about academic programs, and course equivalencies can all be
obtained from this one website.

For CSU, Transferology™ is a database of selected accredited institutions
in the U.S. and some recognized international institutions, their courses,
and how those courses will transfer to CSU. All public institutions in
Colorado and Wyoming are part of this database and, in addition, many
frequently transferred courses from selected institutions in other states
are also listed. Access this database by going to the Transferology
(https://www.transferology.com/login.htm)™ website. If a particular
institution is not listed, contact the Degree and Transfer Evaluation
unit of the Registrar's Office (http://registrar.colostate.edu/about-the-
registrars-office) for evaluation of specific courses.

Statewide Guaranteed Transfer Program (gtPathways)
The state of Colorado has developed a statewide guaranteed transfer
program, which applies to all Colorado public institutions of higher
education, including CSU. Statewide there are approximately 1,000 lower-
division general education courses in 20 subject areas approved for
guaranteed transfer from one public institution of higher education in
Colorado to another.

After starting on a higher education pathway at any public college
or university in Colorado, and upon acceptance to another, a student
may transfer up to 31 credits of successfully (C- or better) completed
guaranteed transfer general education coursework in a set of defined
categories. These courses will apply toward the general education (All-
University Core Curriculum) graduation requirements at CSU. Extended
detail may be found on the Colorado Department of Higher Education
(CDHE) website (http://highered.colorado.gov/Academics/Transfers/
Students.html). The Registrar's Office (http://registrar.colostate.edu/
transfer-credit/transfer-coursework) may also be referenced using the
"GTPathways" tab.

Transfer Appeals Process

Students may appeal a decision regarding the transferability of a specific
course and/or the decision regarding how it is used to fulfill degree
requirements. Any request for re-evaluation of credit should first be
directed to the Degree and Transfer Evaluation unit of the Registrar's
Office.

The student is responsible for supplying any supporting documentation
from the student's transferring college, such as a syllabus or more
detailed course description. The Degree and Transfer Evaluation unit will
either satisfy the student's request or refer the student to an academic
department for additional consideration. If the academic department
cannot fulfill the request for any item related to an AUCC requirement or
an overall university graduation requirement, a formal written appeal may
be presented to the Degree and Transfer Evaluation unit for presentation
to the Vice Provost for Undergraduate Affairs for a final decision. For
information on the appeal process refer to the Registrar's Office (http://
registrar.colostate.edu/earning-my-degree/additional-degree-tools) in the
"Appealing a Required Course" tab.

Credit from Two-Year Colleges

If a student attends one or more regionally accredited two-year
institutions, a total of 64 transfer credits may be accepted.

Credit earned at a two-year college may not be used to meet the upper-
division (300-400 level) graduation requirement. Academic departments
may allow substitution of course work from two-year colleges towards
specific major upper-division requirements.

Transfer guides for specific majors are available for students who
want to complete a four-year degree at CSU by first completing an AA
or AS degree at a Colorado community college, and then completing
the 60 designated CSU credits listed on the guide. Please see the
Registrar’s website (http://registrar.colostate.edu/transfer-credit/
agreements-guarantees) and then select the "Current CSU Transfer
Guides" tab.

Service Schools and Courses of the Armed Services

Credit may be allowed for transfer from those service schools carrying a
baccalaureate credit recommendation in the latest Guide to the Evaluation
of Educational Experiences in the Armed Services prepared by the American
Council on Education (ACE). Students must submit SMARTS (Sailor/
Marine American Council on Education Registry Transcript), AARTS
(Army/American Council on Education Registry Transcript), JST—Joint
Service Transcript, or Coast Guard Institute Registered Transcript to the
Registrar's Office to have the information evaluated for eligibility and to
receive credit. Individual academic departments determine whether those
courses clear specific major curriculum requirements or may be used as
elective credit within the program of study. Visit the Registrar’s Office
(http://registrar.colostate.edu/military-veterans-benefits/military-course-
experience-transfer-credit) for further information.
Transfer Credit from Non-Collegiate Institutions

CSU will award transfer credit for academic work done under the sponsorship of non-collegiate institutions, if the courses proposed for transfer:

1. Have been approved by the American Council on Education,
2. Are listed in The National Guide to Educational Credit for Training Programs, and
3. Are approved by the academic department and college in which the subject matter is taught at CSU.

Please visit the Registrar’s Office (http://registrar.colostate.edu/transfer-credit/transfer-coursework) and select the "Non-Collegiate Transfer Coursework" tab for more information.
FINANCIAL INFORMATION

Tuition and Fees

Authority to set tuition rates is vested in the governing boards of Colorado's state institutions of higher education. The tuition rates which apply to any succeeding fiscal year will not be known until June of each year. The Board of Governors of the CSU System, therefore, reserves the right to change tuition and fee schedules and related policies, including the time, date, and method for payment, at any time.

By registering for a course, a student acknowledges legal and financial responsibility for any and all tuition and fees assessed as a result of registration. Students must follow, and are financially responsible for, formal add/drop and withdrawal procedures at CSU. Non-attendance does not relieve a student of financial responsibility. A student whose account becomes delinquent will be held responsible for paying any late payment charges, collection agency fees up to 40% of the debt, and all costs and expenses including reasonable attorney fees that CSU incurs in its collection efforts. CSU will not register a student, release a diploma or proof of degree, or provide official transcripts to any current or former student who has past due financial obligations to CSU.

Undergraduate Tuition

Schedule of Tuition and Fees

The most current listing of tuition and fees, as well as a tuition calculator, can be found at the Registrar’s Office (http://registrar.colostate.edu/student-resources/tuition-fees) website.

In addition to the charges listed under each category, students may be required to pay differential tuition, program charges, charges for technology, and/or special course fees. Tuition and fees for a student registering for a combination of regular on-campus courses or Division of Continuing Education (CSU Online) courses will be assessed individually according to the schedule established for each.

Students who are off campus for full time internships, practica, and professional affiliations, and are not concurrently enrolled in other on-campus experiences or courses, will be assessed a reduced general fee amount.

College Opportunity Fund (COF)

Undergraduate Colorado resident students are eligible to receive a College Opportunity Fund (http://sfs.colostate.edu/cof) (COF) stipend from the State of Colorado to apply toward tuition costs. To receive the COF stipend, students must apply for the stipend (https://cof.college-assist.org) AND authorize CSU to receive the funds EACH semester via RAMweb.

Differential Tuition

To ensure students have an opportunity to fully explore their academic options and the range of programs offered at CSU, the University does not charge the full cost of tuition until students have acquired 60 credit hours (30 credits if in the College of Business). After that point, at which most students have settled on a major, students begin to pay differential tuition in addition to the base tuition paid up to that point. Differential tuition is assessed to undergraduate resident, non-resident, and WUE students. Credits that students bring upon entering the University may cause them to reach the 60 credit hours earlier than their peers. Almost all of the differential tuition students pay returns directly to the academic colleges and departments to enhance the quality of a CSU education.

Each CSU college’s rates are based on three factors:

- High cost—i.e., how expensive the program is to provide
- High demand—i.e., whether the program is in high demand by large numbers of students
- High return—i.e., how much students generally earn when they graduate from that specific program

Differential tuition is assessed by the course subject code at a rate of $51/$68/$91 per credit hour, depending on the course. Differential tuition is not assessed by a student’s major. For more detail on differential tuition cost per credit, go to the Registrar’s Office website and select Undergraduate Differential Tuition (http://registrar.colostate.edu/student-resources/tuition-fees).

Students are assessed differential tuition upon reaching 30 transcripted credits (sophomore level) for College of Business courses. Students are assessed differential tuition upon reaching 60 transcripted credits (junior level) for all other courses offered at CSU.

Differential tuition is also assessed for specific academic programs (https://webcms.colostate.edu/registrar/media/sites/29/2015/01/Graduate-Program-Charges.pdf) that cost more to offer.

Graduate Tuition

Graduate tuition and fees (http://registrar.colostate.edu/student-resources/tuition-fees) are updated annually. Information about financial support for graduate students is available in the Graduate and Professional Bulletin.

International

The International Student and Scholar Services (http://iss.s.colostate.edu) administrative charge is $90 the first semester and $45 for each subsequent semester. Fees are subject to change. Sponsors
of international students, such as foreign governments, are assessed a charge of $375 per term.

**Personal and Living Expenses**

Students from other countries should anticipate expenses considerably higher than those quoted for domestic students. Additional considerations include costs of deposits for off-campus housing, transportation, international travel, clothing (particularly winter clothing for those coming from warmer climates), living expenses during vacation periods and during the summer months for those who choose to remain on campus, the cost of keeping an automobile and insuring it, child care, shipping books and other belongings home, taxes owed on U.S. source income, and items of personal use which cannot be brought in a suitcase and which must be purchased in the United States after arrival. An annual inflation rate of 3% should be anticipated in all calculations. Refer to the Office of International Programs (http://international.colostate.edu) for an up-to-date list of estimated expenses.

**Medical Insurance**

All non-immigrant students and accompanying dependents are required to enroll in the Student Health Service insurance program (http://health.colostate.edu/student-health-insurance/international-student-health-insurance) (or to show proof of equivalent or better protection).

**Housing**

All newly admitted first-year students without previous college experience, who are single, under 21 years of age, and not living with their parents in the Fort Collins area, are required to live in a residence hall during the summer session. Credits taken concurrent with high school and/or credits attained through Advanced Placement (AP) or International Baccalaureate (IB) do not apply toward living experience. First year students are guaranteed a room in a residence hall on campus (http://www.housing.colostate.edu/residence-halls). The residence halls house 20% non-first year students including transfer students and upper-class students. Students with families, graduate students, and upper class undergraduate students can find information on university apartments (http://www.housing.colostate.edu/university-apartments). Off-campus housing information can be found at Off-Campus Life (http://ocl.colostate.edu).

**Third-Party Billing**

All agencies and other entities sponsoring international students, which utilize third party billing privileges, will be assessed a $375 base service fee per student per academic term. This fee applies to all international students who receive services regardless of whether the student is registered for credit-bearing classes. For a copy of the Service Schedule and/or a detailed list of estimated expenses, send a request to: ISSS Assistant Director, Sponsored Degree Programs, Office of International Programs, 1024 Campus Delivery, Colorado State University, Fort Collins, CO 80523-1024.

**Fees**

**Special Fees**

<table>
<thead>
<tr>
<th>Nonrefundable Fees*</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission application fee</td>
<td></td>
</tr>
<tr>
<td>New and transfer students</td>
<td>$50.00</td>
</tr>
<tr>
<td>Guest students</td>
<td>$60.00</td>
</tr>
<tr>
<td>Application fee for admission to professional program in Veterinary Medicine</td>
<td>$60.00</td>
</tr>
</tbody>
</table>

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**Special Course Fees**

Certain courses require enrolled students to pay fees for special services and/or materials. Courses with fees are indicated by a Yes in the Special Course Fee line in Courses A-Z. Special course fees are updated in June for the upcoming academic year. For the most current listing of special course fees, visit the Provost and Executive Vice President’s web page (http://provost.colostate.edu/students) and select Complete List of Special Course Fees.

There are four types of special course fees:

1. For some courses, enrolled students are assessed a uniform fee during registration to cover costs such as the rental of external facilities, the expenses of field placements, the provision of special equipment and materials that the University would not otherwise maintain, and/or the costs of off-campus travel of students with supervising faculty members.
2. For some courses, enrolled students are assessed a fixed or variable fee by the department based upon actual use of expended materials supplied by the department and used by the student in the creation, construction, and/or fabrication of an object of value, such as a class project that becomes the student’s property. These fees are designed for situations in which it is more efficient for the departments to supply the expendable materials because of the inability to make individual purchases economically.

3. For some courses, enrolled students are assessed variable fees by the department based upon actual damage or non-return of equipment used in the courses.

4. For some courses, enrolled students are assessed a fixed fee to provide funds for replacement or upgrade of equipment that was purchased originally through department funds and cannot be maintained appropriately without this type of student fee support.

All special course fees will be assessed and collected through normal student accounts receivable procedures. No fees should be paid directly to academic departments or individuals.

Tuition and Fee Adjustments

- Registration Cancellation
- Registration Changes
- Course Withdrawal
- University Withdrawal
- Student General Fee Appeal Process

Registration Cancellation

Before classes begin for a particular term, all courses can be canceled via RAMweb (https://ramweb.colostate.edu) with no assessment charges. Students not planning to attend must cancel their registration before the fall or spring semester begins or they will be assessed a portion of tuition and fees.

Registration Changes

Tuition and fees will be adjusted (not cancelled) for undergraduate students if credits are added or dropped during the schedule change period at the beginning of the semester. Specific dates are listed in the online class schedule. After this deadline, there is no adjustment in tuition and fees if a student drops part of his or her schedule.

Course Withdrawal

Students may withdraw from a course through the end of the Withdraw period for the individual class. The specific date is listed on the online Class Schedule (https://ramweb.colostate.edu/registrar/Public/ClassSchedule.aspx) or in the My Weekly Schedule on RAMweb (http://ramweb.colostate.edu). When a student withdraws from a course, a W will appear in place of the grade. This does not affect the GPA. There is no refund of charges associated with the course in the case of a withdrawal for an on-campus course. For charges associated with withdrawing from a Continuing Education online course, please go to CSU Online (http://www.online.colostate.edu).

University Withdrawal

Once the semester begins in fall or spring, students dropping all courses and leaving CSU (completing a University Withdrawal) must do so through RAMweb (https://ramweb.colostate.edu).

The schedule for tuition and fee adjustments for students withdrawing from CSU may be found on the Registrar’s website (http://registrar.colostate.edu/registration/registration-changes).

Exceptions to the prorated tuition and fees adjustments may be made in the following situations:

1. Withdrawing students who received financial aid are subject to specific federal, state, and University withdrawal policies regarding tuition and fees, housing charges, return of funds to financial aid programs, and repayments resulting from their withdrawal.

A withdrawal may require an immediate return of financial aid funds. Returns are calculated according to Federal Student Assistance General Provisions regulations. The date of a student's withdrawal, financial aid disbursements to the student's account, and CSU charges, are used to calculate the return amount.

The student may have to repay those funds which are in excess of an amount based on their length of enrollment.

All calculated refunds and repayments of CSU charges will be allocated to financial aid programs first, and any remaining amount to the student.

2. CSU room and board charges will be assessed through the vacate date from CSU housing.

3. In the case of a student death, a refund of tuition and fees may be made anytime during the semester.

4. Withdrawal as a result of serious illness, disabling accident, military draft, or activation of reserves or National Guard units, appeals will be initiated and reviewed at the Office of the Provost/Executive Vice President, Administration, Room 108.

5. Please note: No financial adjustment will be made for a student who is suspended, dismissed, or expelled for breach of discipline.

Additional information related to University Withdrawals, being called to active military duty, registration cancellation, and other registration changes is available at Academic Standards and Policies in the Registration section.

Student General Fee Appeal Process

Billing for the Student General Fee may be contested, in writing, within the first two weeks after the add/drop date of the term for which the fee is imposed. The request should outline the particular circumstances for contesting the applicability of the mandatory full-time Student General Fee. Send the request to: Student General Fee Appeal Committee, Office of the Vice President for Student Affairs, CSU, 8004 Campus Delivery, Fort Collins, CO 80523-8004. The following information should be included in the request: full name, CSUID, current address, telephone number, and e-mail address. Decisions of the committee are final.

CSU Online

Tuition for CSU Online/Continuing Education Courses

Tuition and fees assessed for courses offered through CSU Online (Division of Continuing Education) vary by program, level of instruction, and delivery method. Colorado residency status is not a factor in determining online, distance, or off-campus tuition rates; however, residency status is a factor in determining tuition rates for some on-
campus credit courses offered through CSU Online. Tuition assessed through CSU Online is in addition to any other tuition assessed by the University. Refer to the CSU Online website for specific tuition rates and more information.

CSU Online courses and programs qualify for financial aid (http://www.online.colostate.edu/faqs/financial-aid.dot), including federal financial aid, scholarships, military discounts, and veterans' benefits.

Additional Expenses

• Personal and Living Expenses
• Student Health Insurance
• Housing Deposit

Personal and Living Expenses
The amount of money spent by a student in an academic year (two semesters—August to May) for personal and living expenses varies with current prices and the habits and needs of the student; therefore, it is important that each student estimate the amount of money needed for such items as, laundry, clothing, transportation, health care, etc. Expenses not directly related to educational costs are not included in the estimates.

Example of Estimated Direct Expenses for 2016-2017 (based on 15 credits per semester for 2016-2017)

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total base tuition and fees</td>
<td>$13,330</td>
<td>$28,374</td>
</tr>
<tr>
<td>College Opportunity Fund stipend credit (Colorado residents)²</td>
<td>- $2,250</td>
<td>$0</td>
</tr>
<tr>
<td>Student share of base tuition and fees³</td>
<td>$11,080</td>
<td>$28,374</td>
</tr>
<tr>
<td>Charge for technology (average)</td>
<td>$166</td>
<td>$166</td>
</tr>
<tr>
<td>Living allowance⁴</td>
<td>$11,862</td>
<td>$11,862</td>
</tr>
<tr>
<td>Books and supplies</td>
<td>$1,200</td>
<td>$1,200</td>
</tr>
<tr>
<td>Total direct costs for the year⁵</td>
<td>$24,308</td>
<td>$41,602</td>
</tr>
</tbody>
</table>

¹ A significant percentage of non-residents with competitive academic records are offered scholarships to help offset the cost of tuition.
² If you are a Colorado resident, be sure to apply for the College Opportunity Fund (COF) (https://cof.college-assist.org).
³ There may be additional costs for undergraduate students enrolled in courses with differential tuition. For more information about tuition and fee charges, visit the Registrar’s Office (http://registrar.colostate.edu) website.
⁴ For students residing in CSU housing, an average amount, assuming double-occupancy suite-style room with an “Any 14” meal plan; Actual expenses may vary. For details visit the Housing & Dining Services website (http://housing.colostate.edu).
⁵ This figure does not include personal expenses for such items as, laundry, clothing, transportation, health care, etc., which vary from student to student.

Office of Financial Aid (http://sfs.colostate.edu) provides additional information about annual costs, including estimates of personal expenses.

Student Health Insurance
To protect students' good health and financial stability, students are required to carry adequate health insurance coverage (http://health.colostate.edu/student-health-insurance).

Housing Deposit

Residence Halls
The $150 housing deposit for residence hall students serves as both a reservation fee and a contractual guarantee. A partial refund of this deposit is available if the applicant cancels his/her request prior to the date the residence halls open for the semester. For specific information about the refund policy, refer to the “Housing Deposit & Refund Information” outlined in the Housing Guide or on the Housing & Dining Services website (http://housing.colostate.edu).

University Apartments
A $340 application deposit is required for students applying for university apartments. This deposit will convert to a damage/cleaning deposit at the time of assignment. The deposit will be refunded any time prior to confirming an apartment assignment, upon request. The refund procedure for current apartment residents is outlined in the Apartment Life Housing Agreement. For further information, refer to the Housing Guide or the Housing & Dining Services website (http://housing.colostate.edu).

Enrollment Status

Enrollment status (full-time, three-quarter time, half-time) is determined by the number of credits which the student has completed or is pursuing for the term in which the verification is requested. Courses from which the student has withdrawn or is auditing are not included. (The following schedule for enrollment status differs from the full-time/part-time schedule for tuition and fees (http://registrar.colostate.edu/student-resources/tuition-fees).

Credit requirements are as follows:

Fall/Spring/Summer Semesters:

Undergraduate Students

<table>
<thead>
<tr>
<th>Credits</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>12 or more credits</td>
</tr>
<tr>
<td>Three-quarter time</td>
<td>9-11 credits</td>
</tr>
<tr>
<td>Half-time</td>
<td>6-8 credits</td>
</tr>
<tr>
<td>Less than half-time</td>
<td>5 credits or less</td>
</tr>
</tbody>
</table>

Graduate Students

<table>
<thead>
<tr>
<th>Credits</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>9 or more credits</td>
</tr>
<tr>
<td>Three-quarter time</td>
<td>7-8 credits</td>
</tr>
<tr>
<td>Half-time</td>
<td>5-6 credits</td>
</tr>
<tr>
<td>Less than half-time</td>
<td>4 credits or less</td>
</tr>
</tbody>
</table>

For verification of enrollment status go to RAMweb (https://ramweb.colostate.edu) and click on Enrollment Verification Certificate. For more information visit the Registrar’s Office (http://registrar.colostate.edu/student-resources/enrollment-degree-verification) website.
Residency for Tuition Classification

Office of Financial Aid (http://sfs.colostate.edu), Centennial Hall (970) 491-6321
FAX: (970) 491-5010

Refer to the residency section (http://sfs.colostate.edu/residency) of our website for more information.

Classification of students for tuition purposes is governed by state statute ("tuition law") which sets forth conditions for a student being considered as "in-state" for purposes of tuition classification. The tuition law is contained in sections 23-7-101 to 111 of the Colorado Revised Statutes and in published policies of the Colorado Commission on Higher Education (CCHE). Although individuals may be considered state residents for voting or other legal purposes after being in the state for a short period of time, the tuition law specifies additional requirements for classification as "in-state" for tuition purposes. The tuition law, which applies to all public institutions of higher education in Colorado, is subject to judicial interpretation and can be changed from year to year by the Colorado Legislature. CSU must apply the rules set forth in the Colorado Revised Statutes, and is not free to make exceptions except as specifically permitted under the statutes and CCHE policies.

Note: This information is considered to be general guidance and is not legal advice. Refer to state statute to review the current law.

Definition of "In-State Residency"

Under the Colorado tuition law, the term "in-state" student means: "A student who has been domiciled in Colorado for one year or more immediately preceding the first day of classes for the term for which such status is claimed." Further the tuition law states: "Attendance at an institution of higher education, public or private, within the state of Colorado shall not alone be sufficient to qualify for domicile in Colorado."

In-state classification requires domicile in Colorado for 12 months on or prior to the first day of classes of each semester. "Domicile" is the term used to describe the place where a person has chosen to make a permanent and fixed home. Domicile is made up of two components: physical presence and evidence of intent. Both physical presence and evidence of intent must be established to begin the domicile year. A student can only establish domicile in Colorado for tuition purposes if he or she intends to reside permanently in the state, and meets the definition of a "Qualified Person." A qualified person is one who is (a) 22 years of age or older, (b) a post-baccalaureate graduate student, or (c) an emancipated minor. (A minor who is married for 12 months is presumed to be emancipated.) A person must be qualified under one of these categories in order to begin the 12-month period of domicile for purposes of in-state tuition. Unemancipated minors qualify for in-state tuition if the parents have been domiciled in Colorado for one year. Exceptions to One Year Domicile (http://sfs.colostate.edu/residency) are in this section and also online.

Initial residency determination for tuition purposes of any student enrolling at CSU is determined by the Office of Admissions. To be initially considered for in-state classification you must answer all residency questions completely and accurately on the application and submit requested evidence substantiating their claim. Failure to do so will result in classification as out-of-state for tuition purposes. The initial determination may be changed if additional evidence regarding the student’s eligibility for in-state classification is received.

Petition for Reclassification

A petition may be filed if a student wishes to contest out-of-state classification or if he or she has subsequently become eligible for in-state status. Petition materials may be obtained from Student Financial Services. Petitions will be processed only for students who have been admitted to CSU and are currently enrolled for the semester for which they are requesting a change in classification.

A student's current tuition classification will remain until they have received notification from the Student Financial Services Tuition Classification Officer indicating a residency change has been approved. Students who are petitioning for in-state classification remain responsible for paying their tuition based upon current tuition classification. Students are strongly urged to petition by the “Priority Deadline to Submit Petition” provided on the Office of Financial Aid website (http://sfs.colostate.edu/petition-process-and-deadlines) in order to receive a response of their tuition classification prior to the beginning of the semester and tuition and fee deadlines.

Petition Process/Deadline

The Office of Financial Aid (http://sfs.colostate.edu) must receive completed petitions no later than the published deadline date for the semester for which the student is petitioning. Deadlines (http://sfs.colostate.edu/residency) are provided on the SFS website. Petitions will not be accepted after the published deadline date and incomplete petitions will not be accepted and/or reviewed for that semester, and the tuition classification and tuition assessment will remain nonresident for that term.

Students will be notified of the results of their petition by mail or CSU email. Please allow up to six weeks for notification. If additional information is required, the additional information must be submitted within the requested time frame unless special arrangements are made with the Tuition Classification Officer.

Decisions made by the Tuition Classification Officer may be appealed to the University’s Residency Appeals Committee. A student wanting to appeal the decision to the Residency Appeals Committee must contact Student Financial Services no later than the appeal date listed in the letter in which the decision was conveyed to the student. The decision of the Residency Appeals Committee is the final CSU determination for that specific semester. In addition, there are no provisions in the Tuition Classification Statutes for retroactive petitioning.

The fact that a student does not qualify for in-state status in any other state does not guarantee in-state status in Colorado; in-state classification is governed solely by Colorado statute. The tuition classification statute places the burden of proof on the petitioner to provide clear and convincing evidence of a change in eligibility for in-state tuition once the student has registered.

Any student who provides false information to avoid paying out-of-state tuition may be subject to legal and/or disciplinary actions.

In-State Status: Other Circumstance

Exceptions to the one-year residence requirement exist for the following:

• Colorado National Guard members
• Active-duty military stationed in Colorado on permanent orders in the last 12 years
• Honorably-discharged members of the U.S. armed forces
• Active-duty military members domiciled in Colorado prior to enlistment
• Canadian military stationed in Colorado
• Employees of companies moving to Colorado receiving government economic incentives
• Children of new faculty members at Colorado state colleges and universities
• Western Regional Graduate program enrollees
• 4 year rule and complete junior year of high school in Colorado
• A student, other than a nonimmigrant alien who attended a Colorado high school for three years who is admitted into a Colorado Institution of Higher Education within twelve months after graduation or completing a GED in Colorado.

For detailed explanation of the requirements for these exceptions, including spouse and child eligibility, go to the Office of Financial Aid (http://sfs.colostate.edu/residency) website or review the Colorado Higher Education Residency Guide (http://highered.colorado.gov/Finance/Residency/default.html).

Paying Your Bill

Cashiers Office
Howes Street Business Center, First Floor
555 S. Howes St.
(970) 491-2767
bursar.colostate.edu/cash.aspx (http://bursar.colostate.edu/cash.aspx)

A student may make a payment on their student account by using CSU’s preferred payment option—Electronic Payments. Electronic Payment is the fastest, most secure way to make a payment. Payment by Electronic Check is a free service to students and other authorized individuals and is easy to use.

Electronic Payments may be accessed through RAMweb (https://ramweb.colostate.edu) and/or FAMweb (http://parents.colostate.edu/famweb). The routing number and bank account number from the bottom of a personal check will be required.

For details on other payment options, please visit the Bursar’s website (http://www.bursar.colostate.edu/treasury.aspx).

Student Billing

Office of Financial Aid
Office in Centennial Hall, First Floor
(970) 491-6321
sfs.colostate.edu (http://sfs.colostate.edu)

In support of CSU’s Green Initiatives, CSU implemented e-billing effective in Fall 2010. Billing notifications are e-mailed to Rams e-mail addresses. Students can then log into RAMweb to view their University Billing Statement. Additional billing notifications may be sent to alternate e-mail addresses maintained by the student on RAMweb.

Due Dates:

<table>
<thead>
<tr>
<th>Season</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>September 10</td>
</tr>
<tr>
<td>Spring</td>
<td>February 10</td>
</tr>
<tr>
<td>Summer</td>
<td>June 10</td>
</tr>
</tbody>
</table>

University charges are due by the date specified on the bill. Due dates are the 10th of each month unless the 10th falls on a weekend or holiday, then the due date is the following business day. CSU does not offer an installment plan on payments. All payments should be in U.S. currency. Mailed payments must reach the University Cashier’s Office, 6015 Campus Delivery, by 4:00 p.m. (MT) on the due date. Payments by check are processed when received – postmarks do not apply and future dates are not honored. Online payments must be made by 4:00 p.m. (MT) on the due date for the payment to be considered timely. Penalties for late payment include holds on University services and a 1.5% payment deferral charge of the past due balance. Penalties are initiated for the purpose of encouraging prompt payment.

Student Account Notes

Students are responsible for all charges on their account and arrangement of payments due. Payments should only be made when a balance due exists on an account. In general, overpayments will not be applied to the student’s account, but will be returned within two weeks if no additional charges are posted to the account.

Students who are sponsored by a third party may request direct billing to the sponsor for tuition, fees, and other related educational expenses. Detailed information on sponsor billing is available upon request from the Accounts Receivable Office. Arrangements for sponsor billing must be made prior to the student account due dates to prevent late payment penalties.

The “Billing Information” section in RAMweb (https://ramweb.colostate.edu) provides more information on setting up a billing address, billing statement information, accepted payment methods, credit balance refunds, and education tax credit information (1098-T forms).

Unpaid past due balances may cause a hold on registration, transcripts, and diplomas. CSU will not register a student, release a diploma, or provide official transcripts or proof of degree conferral to any student or former student who has past due financial obligations to CSU, until the hold is removed. The release of the hold may be expedited by paying the past due balance in full.

Failure to pay amounts due may result in the referral of the outstanding balance to a collection agency, at which time the student would be responsible for any late payment charges, collection agency fees up to 40% of the debt, and all costs and expenses including reasonable attorney fees that CSU incurs in its collection efforts. Further, CSU reserves the right to impose a penalty fee and financial hold for returned checks (refer to Returned Checks policy).

Returned Checks

All checks returned for insufficient funds or invalid account information, either paper or electronic, will incur a penalty as provided by state law.

CSU will attempt to contact the originator of the check by mail and by telephone. In the case of students, a notice will be mailed to the primary address on file for the student. If no response is received, a follow-up mailing will be sent to the student’s permanent mailing address of record. (All students are required to maintain an accurate address and telephone number with CSU at all times.) These reparable payments are considered due in full immediately. The payment must be equal to the full amount of the original payment plus penalty and fee if applicable. If CSU receives two returned checks on a student account, all payments from that time forward will require guaranteed funds. Failure to follow through will result in further collection actions. Please note: If the presentation of the
Financial Aid Programs

CSU offers a variety of financial assistance programs for students based on merit and income. Awards recognize scholastic achievement, assist low income students, and provide funding so students can reach their goal of graduation.

Address Updates

It is the student’s responsibility to maintain correct addresses (mailing and email) with CSU. To create or update an existing address, go to RAMweb (https://ramweb.colostate.edu). In order to communicate quickly and effectively with students, CSU now requires that each enrolled student provide an e-mail address. CSU has designated email as an official form of communication to students. Information about @rams e-mail accounts, including how to forward to another e-mail account, may be found on the eID website (https://eid.colostate.edu/gmail/Faq.aspx?idval=GFORW).

Being able to communicate electronically with the student population provides several benefits:

- Students can be quickly notified by professors and CSU offices of events that affect them personally or may be of interest to them generally (e.g., classroom changes, class meeting time changes, department activities, etc.);
- It’s faster and less costly than printing and mailing letters;
- It advances CSU’s commitment to environmental consciousness by reducing paper use and eliminating physical refuse.

It is also essential that students maintain a current mailing address with CSU by updating it on RAMweb (https://ramweb.colostate.edu).

Deadlines for registration and payments of tuition, fees, and other charges must be met to allow registration to occur. Therefore, students must respond to correspondence from CSU in a timely manner.

Financial Assistance

- Student Financial Services
- Applying for and Retaining Financial Aid
- Student Employment Services
- Veteran’s Benefits
- Financial Support for Graduate Students

Office of Financial Aid

Office in Centennial Hall
(970) 491-6321

The Office of Financial Aid (http://sfs.colostate.edu) administers a variety of institutional, state, federal, and private financial assistance programs for qualified students. Financial assistance programs include scholarships, grants, loans, and employment. Employment opportunities available include the Work Study Program, on-campus departmental positions, and community part-time employment.

Detailed information on all financial aid programs is available on request from the Office of Financial Aid (http://sfs.colostate.edu). Financial aid policies and procedures may change without notice.

Scholarships

CSU administers state, federal institutional, private agency, foundation, service club, and individual scholarships. The CSU Scholarship Application (CSUSA) is available on RAMweb (https://ramweb.colostate.edu) December 1 to March 1 of each year. Students use the CSUSA to apply for most CSU scholarships. Scholarship information, including specific criteria, application requirements, and deadline dates is available on the website.

Nationally Competitive Scholarship Opportunities

Assistance is available to qualified undergraduate students who wish to apply for nationally competitive scholarships and fellowships sponsored by federal and private organizations. These include but are not limited to the Truman, Marshall, Udall, Rhodes, Gates-Cambridge, Goldwater, and Fulbright scholarships. These scholarships and fellowships are highly competitive and require high grade point averages (GPAs), a commitment to service both on and off campus, and specific career and professional goals. In many instances, these organizations support undergraduate and/or graduate work within the United States as well as abroad. The Office of Nationally Competitive Scholarship Programs (http://tilt.colostate.edu/ncsp) provides students with information on eligibility, campus deadlines, and assistance in applying for these nationally competitive scholarships and fellowships.

Grants

CSU administers a number of grant programs available to undergraduate students. Several are restricted to Colorado residents.

- Colorado Student Grant (Colorado’s College Responsibility Program)
- CSU Commitment to Colorado
- CSU Ram Grant
- Federal Pell Grant
- Federal Supplemental Educational Opportunity Grant

CSU administers the Federal Pell Grant program for qualified undergraduates. The federal government establishes the dollar limit for the Federal Pell Grant program each year. All grants may be re-awarded in subsequent years, providing the student reapplies for financial aid, continues to document financial need, and maintains satisfactory academic progress.

Loans

CSU participates in the following loan programs:

- Federal Perkins Loan Program (program set to expire September 30, 2017)
- Federal Direct Loan Programs, both subsidized and unsubsidized
- Federal Direct Parent PLUS Loan Program
- Federal Direct Graduate PLUS Loan Program
- Health Professions Loan Program – veterinary medical degree program only

Loan amounts vary depending on degree program, need, eligibility, availability of funds, and maximum limits established by federal regulations.
Work-Study
The Federal and State Need-Based Work-Study Programs are administered by Student Employment Services and provide part-time employment opportunities to qualified students. Both undergraduate and graduate students are eligible to apply. Awards are based on the evaluation of students’ financial need and availability of funds.

The Merit Work-Study Program is available to CSU students and they do not have to document financial need. Students must find a job, generally on campus, which relates to their academic major. All regularly enrolled students, other than Colorado resident graduate students, are eligible to apply. Applications are available on each student’s RAMweb (https://ramweb.colostate.edu) beginning the first Monday of April for the next academic year.

Applying for and Retaining Financial Aid
Application Procedures for Need-Based Financial Aid
Students use the Free Application for Federal Student Aid (https://fafsa.ed.gov) (FAFSA) to apply for financial aid. Application and procedures for any of the above programs may be obtained from the Office of Financial Aid (http://sfs.colostate.edu/applying-for-aid) and is available on the website.

Satisfactory Academic Progress Standards
Students applying for and/or receiving financial aid are expected to maintain satisfactory academic progress. Failure to perform at established levels may result in students becoming ineligible for financial aid. Copies of the complete policy are available at the Office of Financial Aid (http://sfs.colostate.edu/satisfactory-progress), in “Your Financial Aid Guide,” or on the website.

Unofficial Withdrawals
Students who leave CSU and do not formally withdraw will be assigned grades of “U” (unsatisfactory) or “F” (failure). Additionally, recipients of federal aid who never began attendance or who unofficially withdrew from CSU will have federal aid adjusted based on the date of the latest academic event in which the student participated.

If no academic event can be documented, 100% of federal, state, and institutional aid will be cancelled because the student never began attendance. An academically-related activity includes, but is not limited to, verifiable class attendance, an exam, a tutorial, computer-assisted instruction, turning in a class assignment, or attending an assigned study group session.

Fraudulent Receipt of Funds
Students who receive student aid funds through a misrepresentation, falsification, or omission of information may have their names referred to appropriate law enforcement authorities for possible prosecution under the law. Any person who purposely gives false or misleading information may be fined $20,000, sent to prison, or both.

Reporting Changes
All students must immediately notify the Office of Financial Aid (http://sfs.colostate.edu) of any additional resources, such as scholarships, veteran’s non-educational benefits, etc., any changes in their financial situation, residency, class standing, or any other factors which can reasonably be construed to impact their eligibility for financial aid.

Student Employment Services
Office in Centennial Hall
(970) 491-5714

Student Employment Services (http://ses.colostate.edu) is responsible for CSU’s Student Employment Program. This office lists work-study positions, some of CSU’s on-campus student hourly positions, and is a central listing source for employers to post community jobs. Students may view job notices on RAMweb (https://ramweb.colostate.edu).

All individuals who are currently enrolled with at least one or more credits and are degree-seeking may use this service.

Student employees, both work-study and student hourly, are compensated on an hourly basis and are paid every other week through direct deposit to their personal checking or savings account. All student employees enrolled at least half-time as degree-seeking students are exempt from retirement withholdings. Enrollment is verified every pay period.

Several thousand students work on campus each year through the work-study and student hourly programs, and a large number of students find employment off-campus.

CSU is an Equal Opportunity Employer, and adheres to the state’s fiscal rules and the regulations set forth by the Department of Education and the Colorado Department of Higher Education, which govern the work-study and student employment programs.

Student Employment Services staff encourages any student seeking a job to contact them.

Veterans’ Benefits
The Registrar’s Office assists the Department of Veterans’ Affairs (VA) in providing certification for the following education benefits:

Under Title 38, U.S. Code

- Chapter 30 (Montgomery G.I. Bill)
- Chapter 31 (Vocational Rehabilitation)
- Chapter 32 (Post-Viet Nam Era)
- Chapter 33 (Post-9/11 G.I. Bill)
- Chapter 35 (Dependents Educational Assistance)

Under Title 10, U.S. Code

- Chapter 1606 (Selected Reserve/National Guard Members)

In addition, the Veteran's Education Benefits Office will advise and assist students in:

- Meeting residency requirements under the Veterans Choice Act of 2014, Colorado's GI Promise or the Yellow Ribbon Program
- Requesting and obtaining Joint Service Transcripts
- Obtaining additional campus services

Students eligible for any of these benefits must contact the Veteran’s Education Benefits Office (http://registrar.colostate.edu/military-veterans-benefits/benefits-contact-information) in the Registrar’s Office prior to the expected date of enrollment. Applicants should apply to CSU in a degree-seeking major or for teacher licensure before applying for veterans’ education benefits.
A description of the services (http://veteransresources.colostate.edu) CSU provides may be found online. Regulations governing receipt of veterans’ education benefits, Standards of Progress, and other policies (http://registrar.colostate.edu/military-veterans-benefits) are also available online.

Financial Support for Graduate Students

Graduate Assistants

Full-time graduate assistants receive a minimum monthly stipend during the academic year, as set by CSU. Such assistants must register for and complete at least one on-campus credit during each fall and spring semester during which the assistantship is in effect; and such credits as the appointing department may require each summer term during which the appointment is in effect. Assistants may have tuition payments made in their behalf.

Additional information about financial assistance for graduate students is available in the Graduate and Professional Bulletin.
ACADEMIC STANDARDS AND POLICIES

• Academic Advising
• Grading
• Scholastic Standards
• Academic Policies
• Academic Credit
• Registration
• Degree Requirements
• Graduation Procedures and Information

Academic Advising

Academic advising is a relationship with mutual responsibilities between an advisor and student advisee for timely consultation, sharing of accurate and complete information, careful listening, critical evaluation, and respectful interchange. Academic advising can be facilitated by either professional staff or faculty. Academic Success Coordinator (ASC) is the title of many CSU advisors.

All students are entitled to a quality advising system that provides the following:

• Accessibility to students;
• Adequate time for advising sessions;
• ASC/advisors who are well-versed in the requirements of programs and policies;
• ASC/advisors who relate successfully to a wide variety of students;
• Academic and personal resources for meeting students’ needs;
• Maintenance of adequate and confidential records.

Undergraduate

Where do I find my advisor?

Each undergraduate student is assigned an academic advisor. Undergraduate students may locate advisor assignments in RAMweb (https://ramweb.colostate.edu). If the advisor assignment is not clear, the student should contact the department that offers his/her primary major. Undeclared students should contact the Center for Advising and Student Achievement (http://www.undeclared.casa.colostate.edu/home.aspx) (CASA).

In addition to the assigned advisor, students may work with an additional advisor if interested in a professional program such as medicine, law, veterinary medicine, or teacher licensure. Students will also have more than one advisor if completing a double major, minor, or study abroad or are involved in athletics or the Community of Excellence. CASA can help with contact information.

Advisor Role and Responsibilities

The ASC/academic advisor’s responsibilities include the following:

• Help students define and develop realistic education and career goals;
• Assist students in creating an academic plan consistent with their abilities, interests, and goals;
• Assist students in monitoring and evaluating their educational progress;
• Discuss relationships between academic program and career and support students in identifying career opportunities with assistance from the Career Center;
• Interpret and provide rationale for institutional policies, procedures, and requirements;
• Monitor designated educational transactions, e.g., course selection, changes of major, graduation requirements, etc.;
• Maintain a confidential advising record for each student;
• Designate and post hours available for advising; provide email and phone advising as needed;
• Inform students of the nature of the advisor/student advisee relationship.

Advisee (Student) Role and Responsibilities

Students carry important responsibilities in the advising process. In the interest of successfully completing a degree program, a student must be proactive in finding the necessary resources needed for attaining a degree. In order to contribute to an effective advising relationship, students are expected to:

• Schedule and attend advising sessions each semester prior to course registration. It is possible that advising sessions may be conducted via email or telephone, depending on the advisor and/or the advisee
• Clarify personal values, abilities, interests, and goals
• Become knowledgeable of all graduation requirements and adhere to institutional policies, procedures, and deadlines
• Prepare for each advising session
• Follow through on actions identified during each advising session
• Responsibly evaluate advisor in order to strengthen the quality of advisement
• Become familiar with the Career Center and other campus resources

Students should meet with their ASC/advisor within the first month of arriving on campus, again to prepare for registration, and anytime that they have a question or problem. It is important for students to utilize academic advisors for assistance with course selection, major information or exploration, career planning, graduation requirements, and campus resource information.

Advising Resources

In order to get the best from the academic advising experience, students are encouraged to utilize the many advising tools that are available.

• The Degree Progress Audit is an undergraduate degree audit that shows what graduation requirements a student has completed and
what requirements still need to be completed. This audit can be found under Degree Progress Audit, and viewed any time on RAMweb (https://ramweb.colostate.edu).

- The Course and Graduation Planner is a tool allowing undergraduate students to plan out their semester by semester plan through graduation. This tool works well for new first year, transfer, and continuing students. It allows students to add or delete extra semesters and validates against the degree progress audit to make sure that all requirements have been met via the plan. Students may access this via RAMweb (https://ramweb.colostate.edu). Major Completion Maps are available for Undergraduate majors, concentrations, and options. These Maps show a sample semester-by-semester coursework plan, and identify critical courses and requirements that are essential for on-time graduation.

- All-University Core Curriculum (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum) (AUCC) outlines the general education requirements for graduation.

- Advising@CSU (http://advising.colostate.edu) has a compilation of resources, policies, and procedures for students.

- Undeclared students are encouraged to visit CASA (http://www.undeclared.casa.colostate.edu/home.aspx) for additional resources for exploring majors and Academic and Career Horizons (http://secure.casa.colostate.edu/applications/achoriz) for information that describes interests, skills, and career opportunities for each major.

- The CSU Career Center (https://career.colostate.edu) empowers students to pursue satisfying careers through the development of individualized careers plans.

Many more resources are available to assist with academic success at CSU. Primary contact for locating these resources will be the student’s ASC/advisor.

Undeclared Advising

“Undeclared” is a special designation for students who have a rich and diverse set of interests that span the CSU curriculum and want to explore all their options. Through the Undeclared advising process students are able to learn about various academic opportunities while keeping their options open as they begin their college experience. Professional academic advisors in the Center for Advising and Student Achievement (CASA) are knowledgeable about the full breadth of academic requirements so as to better assist students in the process of selecting a major. Advisors help students plan their schedules, provide information on career options, and refer students to other resources. Students are encouraged to declare a major by the time they earn 45 credits.

Undeclared students, in the semester where their census-date registration would lead them to achieve a total of 60 or more credits, and any semester afterwards, will have a hold placed upon subsequent registrations, and will be required to visit the CASA office to discuss selection of a major and to ensure they are aware of the possible consequences of delaying this choice. Such consequences may include, but may not be limited to, the inability to graduate within 4 years, and loss of the College Opportunity Fund (http://sfs.colostate.edu/cof) (after reaching the maximum allowed credits) and possible other financial aid.

At this meeting, in order to have their hold removed, undeclared students will sign a document indicating that they understand these possible consequences, and will indicate when they intend to select a major, how long it will take for them to complete this major, or how they intend to gain entrance into a competitive major if that is their goal.

Graduate Students

Advising information for graduate students is available in the Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin/graduate-study/procedures-requirements-all-degrees/#advisory-system).

Grading

Faculty and instructors submit grades once coursework has been completed. The approved grade mode(s) are included in the information with each course in this General Catalog (in the course bubble). Grade modes are Traditional (A through F letter grades), Student Option Satisfactory/Unsatisfactory, Instructor Option, Satisfactory/Unsatisfactory, and Audit. See below for more information.

- Grading Scale
- Grade Mode Descriptions
- Discontinuing a Class (Student Non-Attendance)
- Semester Grades
- Transcripts
- Grade Appeals
- Repeat/Delete Policy

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade points per credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.000</td>
</tr>
<tr>
<td>A</td>
<td>4.000</td>
</tr>
<tr>
<td>A-</td>
<td>3.667</td>
</tr>
<tr>
<td>B+</td>
<td>3.334</td>
</tr>
<tr>
<td>B</td>
<td>3.000</td>
</tr>
<tr>
<td>B-</td>
<td>2.667</td>
</tr>
<tr>
<td>C+</td>
<td>2.334</td>
</tr>
<tr>
<td>C</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>D</td>
<td>Poor, but passing</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawal</td>
</tr>
<tr>
<td>H</td>
<td>Honors</td>
</tr>
<tr>
<td>AU</td>
<td>Audit</td>
</tr>
<tr>
<td>NG</td>
<td>No Grade Reported</td>
</tr>
<tr>
<td>NGC</td>
<td>Non Graded Component</td>
</tr>
</tbody>
</table>

1 Credits not used to compute grade point average (GPA) and not counted toward graduation.
2 Not used to compute GPA. Non-graded components are attached to a graded component carrying credits.
Credits for courses graded F are used to compute GPA, but they do not count toward graduation.

Effective Fall 2008, C-, D+, and D- grades are not assigned at CSU.

When an X is placed before a grade, e.g., XA, XB, etc., the student has been granted an Academic Fresh Start. These grades are not calculated into the grade point average.

When an R is placed before the grade, the student has elected to repeat the course under the terms of CSU’s Repeat/Delete policy. The original course grade is not calculated into the grade point average.

When an AM is placed before the grade, it indicates a finding of academic misconduct by the student in the particular course. For more information, see Procedures for Dealing with Academic Misconduct in the Students’ Responsibilities section of University Policies.

Students may contest whether or not an assigned grade was recorded accurately in the educational record by following the procedures described under the Grade Appeal section.

Grade Mode Descriptions

Traditional
Term grades are reported using the Grading Scale above.

Faculty use of +/- grading is optional. Course instructors should indicate on the course syllabus and/or policy statement the grading system used in the course.

Student Option Satisfactory/Unsatisfactory
Undergraduate students may elect satisfactory/unsatisfactory grading in one course per term in courses offered for Student Option Satisfactory/Unsatisfactory grading under the following conditions:

Undergraduate students, except first-term freshmen and transfers, with a cumulative CSU grade point average of 2.000 or better and with the advisor’s consent, may register for approved courses on a Student Option Satisfactory/Unsatisfactory basis. This work may not be in areas of study required in the student’s major, minor, teacher licensure, or for All-University Core Curriculum requirements (i.e., it must consist of free electives not specified as to general area of study). (A three-credit social science requirement, for example, would not be considered free electives.) Students must register for the course first, then complete the Student Option Satisfactory/Unsatisfactory and Audit Grading form to elect this option. The form can be found at the Registrar’s Office website (http://registrar.colostate.edu/forms/auditsatisfactory-unsatisfactory-grading-form). Changes to Satisfactory/Unsatisfactory grading can only be made during the add/drop period.

Performance equivalent to a grade of C or better is recorded as Satisfactory. Performance equivalent to D or F is recorded as Unsatisfactory. Neither the S nor U grades are used in calculating the CSU grade point average; however, courses graded S may apply to graduation requirements.

Incomplete Grades
At the discretion of the instructor, a temporary grade of "I" may be given to a student who demonstrates that it is not possible to complete the requirements of a course due to circumstances beyond the student's control and not reasonably foreseeable. A student must be passing a course at the time that an incomplete is requested unless the instructor determines that there are extenuating circumstances to assign an incomplete to a student who is not passing the course. When an instructor assigns an "I", the instructor shall specify in writing the requirements the student shall fulfill to complete the course as well as the reasons for granting an "I" when the student is not passing the course. The instructor shall retain a copy of this statement in the grade records and provide copies to the student and the department head or designee. The student should not register for the course again to complete the coursework. After successful completion of the makeup requirements, incomplete grades will be changed by the instructor of record or the department head, in absence of the instructor of record. After one year, an incomplete will be automatically changed to an "F" (failure) unless the course has been previously completed and a grade change submitted by the instructor or the head of the department. The temporary grade of “I” must be changed to a grade (e.g., A, B, C, D, F, S, U) prior to the student being awarded a diploma from CSU.
Discontinuing a Class (Student Non-Attendance)

If a student discontinues attending a class and has not officially dropped or withdrawn through RAMweb (https://ramweb.colostate.edu) or the Registrar's Office, the grade of F (failure) is recorded.

Semester Grades

Students may access their semester grades through RAMweb (https://ramweb.colostate.edu) three business days after the week of final exams of each term.

Transcripts

Transcripts of students' official academic records are maintained by the Registrar’s Office. Official and unofficial copies of a student’s transcript may be obtained by the student through RAMweb (https://ramweb.colostate.edu).

Grade Appeals

Instructors are responsible for stating clearly the instructional objectives of the course at the beginning of each term and for evaluating student achievement in a manner consistent with these objectives. Students are responsible for maintaining standards of academic performance established for each course in which they are enrolled. Instructors are responsible for determining and assigning final course grades. Graded examinations, papers, and other materials used as a basis for evaluating a student’s achievement will be available to the student for inspection and discussion.

Students may appeal instructor’s grading decisions. The burden of proof, however, rests with the student to demonstrate that the grading decision was made on the basis of any of the following conditions.

1. A grading decision was made on some basis other than performance and other than as a penalty for academic misconduct.
2. A grading decision was based on standards unreasonably different from those which were applied to other students.
3. A grading decision was based on a substantial, unreasonable, or unannounced departure from previously articulated standards.

Before making an appeal, the student should discuss the situation with the instructor(s) involved in the decision. To appeal a grading decision, the student shall submit a written request to the department head. The request must set forth the basis for the appeal, identifying one or more of the three criteria set forth above.

The request must be submitted (or postmarked, if mailed) no later than thirty (30) calendar days after the first day of classes of the following spring semester for appeal of grades recorded for the fall, and no later than thirty (30) calendar days after the first day of classes of the following fall semester for grades received in the spring or summer semester. If no appeal is filed within this time period, the grade shall be considered final.

Within 30 days of receipt of an appeal, the department head shall forward the appeal to the course instructor(s) who assigned the grade and an appeal committee shall be formed. If the request is received during or shortly before the summer session, when the course instructor(s) who assigned the grade or member(s) of the appeal committee may not be available, the appeal committee will be formed no later than 30 calendar days after the beginning of the following fall semester. The appeal committee shall be composed of two (2) faculty members and two (2) students from within the department and one (1) faculty member from outside the department who shall serve as the chair. All five (5) members of the committee shall be voting members. The procedure for the selection of the members of the appeal committee shall be specified in the department code.

The appeal committee will review the written appeal and response of the instructor(s). They may elect to separately interview both the student and the instructor(s) before rendering a decision. The decision of the appeal committee will be based upon whether one of the conditions for an appeal set forth above has been met. At the conclusion of the deliberations, the committee shall render one of the following decisions:

1. the original grading decision is upheld, or
2. the department chair or designee(s) will reevaluate the student’s achievement of the instructional objectives of the course and assign a grade accordingly.

Written notice of the committee’s decision and the reasons for the decision normally will be sent to the student and the instructor(s) within 30 calendar days of the appointment of the committee. The appeal committee's decision is the final decision of the University. Written summaries of the hearing and decision, together with a rationale for that decision, shall be provided to the student and the instructor who assigned the grade and shall be retained in the department office for a period of one year.

Repeat/Delete Policy

Repeat/Delete is a one-time per course grading option that may be used by undergraduate students who repeat a course. Once a student has graduated from CSU, a student may not repeat/delete any CSU course taken prior to the date of graduation. The following rules apply when the Repeat/Delete option is applied:

1. The grade received in the repeated course will be used in calculating the student’s GPA, regardless of whether the repeated grade is higher, the same as, or lower than the initial grade received. The initial grade will remain on the transcript, but will not be used in calculating the GPA when the Repeat/Delete option is applied.
2. It is the student’s responsibility to request the Repeat/Delete option from the Registrar's Office, before the expiration of the course withdrawal period in the semester in which the course is first repeated.
3. The Repeat/Delete option may be used for a maximum of twelve (12) credit hours and no more than three courses. The Repeat/Delete option may not be applied to a course for which the final grade was given as a penalty for academic dishonesty in accordance with the academic integrity policy under section I.5.1 of the Academic Faculty and Administrative Professional Manual (http://faculty.council.colostate.edu/faculty-manual-section-i/#15).
4. If the course is repeated at any time subsequent to the use of the Repeat/Delete option, all grades in that course, except the initial grade, are used in computing the student’s GPA.
5. Although a course may be repeated as often as a student chooses, the Repeat/Delete option can be used only the first time a course is repeated.
6. The Repeat/Delete option will not retroactively affect academic standing for previous terms. For example, use of the Repeat/Delete option may change a student’s cumulative grade point average, but
through the GUEST program, through the CSU Summer Session, or have three options to seek readmission. First, they can take classes from CSU. Students who have been academically dismissed from CSU or higher after two regular semesters (fall and spring) will be dismissed. Students on academic probation who do not raise their CUM GPA to a 2.0 will continue their regular academic standing. Students who withdraw from CSU while on probation will remain on probation or academic dismissal.

Scholastic Standards

Scholastic standards are mandated by the faculty through the Faculty Council Committee on Scholastic Standards. Policies regarding probation, dismissal, and appeal are determined by the faculty and CSU in their absolute discretion subject to acceptance by the governing board of CSU.

- Undergraduate
- Graduate

Undergraduate

Procedures relative to undergraduate scholastic standards are administered through the Center for Advising and Student Achievement (CASA). Those students whose scholastic achievement is less than that required for graduation are placed on probation or dismissed from CSU.

Good Standing - Minimum Cumulative GPA

In order to graduate, a minimum cumulative grade point average (CUM GPA) of 2.000 on a 4.000 scale must be earned at CSU. A student is expected to maintain a CUM GPA of 2.000 or higher at all times. All grades earned in regular credit courses, including those taken through the Division of Continuing Education or the CSU summer session, will count toward the CUM GPA. For students who have been granted a Fresh Start, all grades earned prior to the Fresh Start will not count toward the student’s CUM GPA.

Failure to maintain a CUM GPA of 2.000 or higher will result in academic probation or academic dismissal.

Academic Probation

Failure to maintain a CUM GPA earned at CSU of 2.000 or higher will result in academic probation for a period of two regular semesters (fall and spring). Grades earned in regular credit courses through the Division of Continuing Education or the CSU summer session will count toward the CUM GPA regardless of when those classes are taken. At any time that the CUM GPA is raised to a 2.000 or higher, the student will return to regular academic standing.

Students who withdraw from CSU while on probation will remain on probation if they return to the University. Students on academic probation who return to CSU after attending another institution will continue their probation, since transfer credits are not computed within the CUM GPA earned at CSU.

Academic Dismissal

Students on academic probation who do not raise their CUM GPA to a 2.0 or higher after two regular semesters (fall and spring) will be dismissed from CSU. Students who have been academically dismissed from CSU have three options to seek readmission. First, they can take classes through the GUEST program, through the CSU Summer Session, or through the Division of Continuing Education, but they are not eligible to apply for readmission until the CUM GPA is raised to 2.000 or higher. The second option available to students who have been academically dismissed is to enroll at another accredited institution and meet the requirements to be admitted as a transfer student to CSU. Upon transferring back to CSU, students will have two semesters following re-enrollment to raise their CUM GPA earned at CSU to 2.000 or higher or face academic dismissal again. Transfer credits are not computed within the CUM GPA earned at CSU.

Students who have raised the CUM GPA to 2.000 or higher or who apply as students transferring from another institution may apply for readmission to the University subject to any enrollment limitation as set by the Colorado Department of Higher Education or the governing board.

Appeal of Academic Dismissal

As a third option, students may appeal academic dismissal. An online appeal may be submitted to the Center for Advising and Student Achievement for consideration by the Faculty Council Committee on Scholastic Standards. All appeals must be submitted in accordance with written instructions.

All appeals of academic dismissal will be acted upon by the Faculty Council Committee on Scholastic Standards no later than seven business days prior to the first day of classes for the next regular academic semester (either fall or spring).

Academic Fresh Start

Former CSU undergraduate students may apply for an academic Fresh Start, a policy which allows students to establish a new academic record. A student may be granted a Fresh Start only once.

An academic Fresh Start may be granted after at least two years have elapsed since the student’s last term of enrollment as an admitted, degree-seeking student, regardless of the number of credits taken. Courses taken through the Division of Continuing Education, as a guest student, or the CSU Summer Session after being dismissed or ceasing enrollment as an admitted degree-seeking student will not count against the two-year interval required for a Fresh Start.

Eligibility for a Fresh Start can be achieved in one or both of the following ways:

1. Be successful in a job or volunteer experience and be able to supply strong letters of recommendation from your employer/supervisor (recommendations must not be from a family member or relative).
2. Take at least 15 credits of academic courses either at another institution or as a guest student at CSU and earn a 2.50 or higher cumulative GPA

Students applying for a Fresh Start will also need to:

1. Submit a Returning Student Application by the deadline for the appropriate semester.
2. Write a statement of motivation on why you would like to return to CSU and why you think you are now ready to succeed. Analyze your past behavior and provide evidence of change and success since you left CSU.
3. In your statement, include an action plan for academic success that you have researched and considered carefully. Describe specifically how you will utilize campus advising and resources. Review the
CASA website (http://oas.casa.colostate.edu/campus-resources) for suggested resources.

4. Submit all information to the Office of Admissions (http://admissions.colostate.edu/returningstudents).

Decisions on applications for a Fresh Start will be made by a committee composed of representatives from Admissions, CASA, and the Committee on Scholastic Standards.

A student granted a Fresh Start and enrolled will have a demarcation on the permanent academic record to delineate the previous record from the new academic record achieved under the Fresh Start policy. Credits for those courses in which a grade of at least C- or S was awarded prior to the Fresh Start may be applied toward graduation requirements under the Fresh Start policy.

Only grades earned after the Fresh Start demarcation will be computed in the new GPA. A Fresh Start may have implications regarding other requirements for graduation, such as upper-division and in-residence requirements.

If a student receives a Fresh Start, the student must successfully complete at least 30 upper-division credits of course-work in residence at CSU after the Fresh Start is granted in order to graduate.

Resources

U-Turn
U-Turn (http://tilt.colostate.edu/learning/studySkills/uturn.cfm) is a one-day event that provides students access to academic support resources, all in the same room, to assist in making a plan to turn the semester around.

Change of Major
Students who experience academic difficulty may choose to explore a different academic major. Resources for doing so include this General Catalog, the Center for Advising and Student Achievement (http://www.undeclared.casa.colostate.edu/home.aspx), and the CSU Career Center (https://career.colostate.edu/explore/choosing-a-major).

Undergraduate Planned Leave
Other students may decide that taking one semester off from CSU is in their best interest. Learn more at Undergraduate Planned Leave.

Dean's List
Students should contact their individual college(s) for Dean's List qualifications.

Graduation with Distinction
CSU recognizes outstanding scholarship by granting the baccalaureate degree “Cum Laude,” “Magna Cum Laude,” and “Summa Cum Laude” to those students in each college who have achieved unusually high academic excellence in their undergraduate programs. To be eligible for graduation with distinction, students must meet the following requirements:

• Minimum grade point average required for graduation with distinction and

• Minimum of 60 credits completed at CSU. Students who have been granted Fresh Start must have completed 60 credits after the Fresh Start designation to qualify for graduation with distinction.

Transfer credits are not considered when determining a) candidacy for graduation with distinction or b) graduation with distinction.

The Current Breakdown of Acceptable GPAs for a Distinction Designation:

<table>
<thead>
<tr>
<th>College</th>
<th>Summa Cum Laude</th>
<th>Magna Cum Laude</th>
<th>Cum Laude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Sciences</td>
<td>3.980</td>
<td>3.930</td>
<td>3.790</td>
</tr>
<tr>
<td>Business</td>
<td>3.980</td>
<td>3.900</td>
<td>3.780</td>
</tr>
<tr>
<td>Engineering</td>
<td>3.980</td>
<td>3.930</td>
<td>3.790</td>
</tr>
<tr>
<td>Health and Human Sciences</td>
<td>3.990</td>
<td>3.900</td>
<td>3.760</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>3.980</td>
<td>3.910</td>
<td>3.780</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>3.990</td>
<td>3.910</td>
<td>3.800</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>3.990</td>
<td>3.940</td>
<td>3.830</td>
</tr>
<tr>
<td>Veterinary Medicine and</td>
<td>3.990</td>
<td>3.910</td>
<td>3.800</td>
</tr>
<tr>
<td>Biomedical Sciences</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These minimum cumulative grade point averages will be reviewed every four years and may be changed if needed to maintain appropriate academic standards. Such changes will become effective the semester following approval by Faculty Council and publication in the General Catalog. Each of the minimum grade point averages needed to graduate with distinction will be adjusted at the end of each four year period only if the percentage of students graduating with distinction in a distinction category and college have shown a statistically verifiable deviation from the target percentages of:

| Summa Cum Laude | 1% |
| Magna Cum Laude | 3% |
| Cum Laude       | 6% |

Candidates for graduation with distinction are recognized at the time of commencement. Candidacy is determined by a student’s cumulative grade point average through the semester preceding graduation. “Candidacy” for graduation with distinction does not guarantee graduation with distinction. Graduation with distinction is based on the student’s cumulative grade point average at the time of graduation. The CSU GPA calculation is carried to the third decimal place and is not rounded.

Students seeking a second bachelor’s degree are eligible for distinction designation. To qualify for graduation with distinction, a minimum of 60 credits completed at CSU is required after the first degree. In determining the grade point average of the student, only grades earned after the first degree are considered.

Graduation as a University Honors Scholar
Students who complete the University Honors Program (http://www.honors.colostate.edu) academic requirements and achieve at least a cumulative 3.5 grade point average earn the designation of University Honors Scholar. Scholars are recognized at graduation by the Honors Program and during the colleges’ commencement ceremonies. The University Honors Scholar designation appears on diplomas and transcripts.

Graduate
Graduate students must maintain a 3.0 GPA to be in good standing with the University. Learn more in the Graduate and Professional Bulletin.
Academic Policies

- Class Attendance Regulations
- Final Examinations
- Undergraduate Planned Leave
- Undergraduate Change of Major, Concentration, Minor, or Certificate

Class Attendance Regulations

Students should attend all classes for which they are registered to obtain maximum educational benefits. Absence or lateness does not excuse students from required course work.

Instructors and departments are responsible for establishing class attendance policies. These policies must accommodate student participation in University-sanctioned, extracurricular/co-curricular activities. Students must inform their instructors prior to the anticipated absence and take the initiative to make up missed work in a timely fashion. Instructors must make reasonable efforts to enable students to make up work which must be accomplished under the instructor's supervision (e.g., examinations, laboratories). In the event of a conflict in regard to this policy, individuals may appeal using established CSU procedures.

For purposes of this regulation, University-sanctioned activities include competitions, events, and professional meetings in which students are officially representing the institution. Appropriate sanctioned activities include:

- Intercollegiate athletics;
- Collegiate club sports and competitions;
- Conferences and workshops recognized by CSU not related to academics;
- Commitments on behalf of CSU (ASCSU, band, etc.); and
- Professional activities recognized by CSU related to academics.

Department heads or their designated representatives must approve sanctioned professional and departmental activities. Other sanctioned activities must be approved by the appropriate program director on record with the Division of Student Affairs offices or the Department of Athletics. Refer to this list for the appropriate approving authority (http://studentaffairs.colostate.edu/class-absence-info).

CSU policy permits only enrolled students, persons attending with the permission of the instructor, and administrative personnel of CSU to be present in a classroom during scheduled classroom periods.

At the discretion of the instructor in charge, any full-time student, faculty member, or lifelong learner may attend any class without formal registration provided adequate classroom space is available.

Academic departments may replace any students in a course who fail to attend both of the first two regularly scheduled meetings of the class (one meeting for laboratory courses or for classes which meet once each week), unless the students have notified the department in advance. Since this procedure is a department option, students remain responsible for dropping courses they do not intend to complete within the required time period for drops.

Religious Holidays and Observances

CSU has a legal obligation to accommodate students' absences due to religious observances. For such an accommodation, it is the student's responsibility to complete the Religious Accommodation Request Form (http://www.studentaffairs.colostate.edu/religious-holidays) at the beginning of each semester and submit the request via the Office of the Vice President for Student Affairs website. The Dean of Students will communicate with the instructor regarding the student’s absence and the student is instructed to discuss how best to ensure an accommodation related to class conflicts. For religious observances that cannot reasonably be anticipated at the beginning of the semester, students must follow the procedure above as soon as possible after the course conflict is identified. If a student knows that a particular course or section of the course will have multiple conflicts with his or her religious obligations, the student is advised to locate another course section or defer taking the course to a different semester. In the event of a conflict in regards to this policy, individuals may appeal using established CSU procedures. Instructors are advised to provide reasonable accommodations to ensure compliance with CSU's obligations.

Final Examinations

Final examinations, as appropriate, are given during the final week of each semester. During this week, classes are rescheduled to meet for two-hour periods.

The following procedures apply to all courses during the final week of the semester:

1. Final examination week is part of the regular semester. Student attendance shall be consistent with CSU policy.
2. The final in-class examination period is intended for the end-of-semester examination. No in-class examination constituting more than 10% of the final course grade may be given in undergraduate courses during the week preceding the final examination period of the semester; laboratory, performance, and other alternative classes (e.g., courses in PACe - the individualized mathematics program) excluded. It is the responsibility of the department head, or, where appropriate, the school head, to ensure compliance with this policy.
3. Courses for less than four credits shall meet for one period. Courses for four or more credits may meet for two periods.
4. Classes that begin at times other than on the hour (i.e., 9:30, 2:10, 3:35, etc.) will use the time period assigned for the hour (i.e., 9:00, 2:00, 3:00, etc.). For example, a 4:30 TR class would use the 4:00 TR assigned final examination period.
5. Classes shall meet only at the times indicated on the final examination schedule.
6. Any exception of regulations 3 or 5 above, e.g., special types of examinations which need more time or special locations to conduct, must be approved by the Assistant Registrar in Academic and Classroom Scheduling prior to the second week of class and announced in classes by the second week.
7. If a student has three or more final examinations (not classes) scheduled for the same day or if conflicts of examination times occur, the student may negotiate a time change with the instructors involved. If the parties involved cannot find a mutually agreeable time, the Registrar's office indicates which courses must be changed. Note: The Assistant Registrar, Academic and Classroom Scheduling, must be notified at least one week prior to final examination week to allow instructors time to make appropriate accommodations.

Any student who has a conflict with the examination schedule must inform the instructor as soon as possible before the examination. If an agreement cannot be reached between the instructor and student as to
the appropriateness of a make-up examination, the student should appeal to the department head.

Undergraduate Planned Leave

Undergraduate Planned Leave is a status intended to help students more easily and effectively take one semester away from their CSU studies and successfully return again. Students who obtain Undergraduate Planned Leave status and comply with its requirements do not have to re-apply for admission to CSU upon return. In addition, Planned Leave students will be tracked in an attempt to help facilitate their successful and timely return.

All undergraduate students seeking their first Bachelor’s degree are requested to communicate their plans when leaving CSU in order to determine eligibility for an approved Planned Leave. Students who meet the established eligibility requirements will be granted a Planned Leave for one semester. (A semester is defined as a fall or spring semester and excludes summer sessions; for example, Planned Leave is granted for fall and the student returns the following spring, or is granted for spring and returns the following fall.) Any student leaving for more than one semester should utilize CSU’s Returning Student process via the Office of Admissions when they return. Any student leaving longer than one semester due to military service should work with the Adult Learner and Veteran’s Services Office (http://www.adultstudents.colostate.edu) or the Veteran’s Benefits Office (http://registrar.colostate.edu) to discuss available options.

Some examples of situations where Planned Leave might be appropriate include students on domestic internships, official assignment for CSU, military service, mission service, leave due to medical reasons, family crisis, financial crisis, work, etc.

Per CSU transfer evaluation guidelines, students on Planned Leave may enroll at another domestic post-secondary institution during their Planned Leave. Any student planning on going to an international post-secondary institution must have a conversation with, and follow the processes of, the Education Abroad Office (http://educationabroad.colostate.edu/students) to evaluate what, if any, of the credits taken might transfer back to CSU.

International study while on Planned Leave is not the same as regular Education Abroad. Many different issues arise and processes must be followed by students in the Education Abroad program (http://educationabroad.colostate.edu/students). Students participating in Education Abroad (for-credit study, intern, volunteer, work, or research abroad programs) have a separate CSU process for managing planned leave and therefore are not eligible to participate in this policy.

In order to be eligible for planned leave, a student must meet all of the following criteria:

a. Undergraduate Degree Seeking Student (RI & CE) seeking first bachelor’s degree (2nd Bachelor students are not eligible)

b. Academic Standing: good standing or academic probation one or two.

Students interested in obtaining Planned Leave status must apply and be approved before leaving. For additional information, see the Registrar’s Office website (http://registrar.colostate.edu/planned-leave).

Student Financial Assistance

Most Financial Aid is handled under Federal Title IV requirements. Students who are receiving financial aid should request information about current and future term eligibility when considering Planned Leave. Students who are receiving scholarships should request information regarding renewability. Students are not eligible for any financial aid disbursements during the semester(s) on Planned Leave. Students on Planned Leave will be reported to lenders and loan service agencies as “non-attending” and will need to contact lenders for information regarding possible repayment requirements.

International Students

Because there are federal visa requirements, International students must discuss their options for Planned Leave with the Office of International Programs (OIP) to determine the impact of the Planned Leave to their immigration status. All international students must be enrolled in a full course of study while in the United States.

Returning from Planned Leave

All students returning from an approved Planned Leave will be required to respond to the safe campus community questions as part of their process for returning to campus. A full set of steps for students returning from a Planned Leave are available on the Planned Leave website (http://registrar.colostate.edu/planned-leave).

Undergraduate Change of Major, Concentration, Minor, or Certificate

In many, but not all cases, an undergraduate student regularly enrolled in CSU may change from one major to another. Students complete this process by working with the advisor/academic support coordinator in the department to which they would like to change. Students should schedule an appointment by contacting the department offering the major, minor, or certificate to which they would like to change (or add). Some departments create advising appointments by phone, others via signing up online; some advising appointments are individual, others are group change of major sessions.

Some majors—considered competitive or controlled-entry majors—require specific entrance requirements (portfolio, audition, cumulative GPA, grades in specified courses, etc.). Students wishing to change from one major to another can obtain information about any restrictions or requirements that may be in place, as well as the actual process involved, from their advisor, the academic department offering the major, or from the Center for Advising and Student Achievement (http://www.casa.colostate.edu) (CASA).

Newly admitted students who have not begun classes must contact the Admissions Office (http://admissions.colostate.edu) to change their major.

Dropping a Major, Minor, Concentration, or Certificate

Students wishing to drop a minor or second major should make an appointment with their academic advisor to be sure all options are fully understood. Students then submit a change of major form to the Registrar’s Office (http://registrar.colostate.edu), First Floor in Centennial Hall.
Changes of major, minor, or certificate are generally processed within one business week. Students may check their status in RAMweb (https://ramweb.colostate.edu).

**Academic Credit**

- Credit Hour and Credit Load
- Undergraduate Classification
- Enrollment Status

**Credit Hour and Credit Load**

A credit hour is defined as 50 minutes of lecture or discussion/recitation per week for 16 weeks (800 minutes in a semester), 100 minutes of laboratory per week for 16 weeks (1600 minutes in a semester) when outside preparation is required, or 150 minutes of laboratory per week for 16 weeks (2400 minutes in a semester) when no outside preparation is required. For workload planning purposes (and to graduate with 120 credits in eight semesters), students should plan on an average of 15 credits per semester and should expect that each credit hour will require approximately two to three hours (for some students in some classes, more time and in a few classes less time) of effort per week to attend classes and to accomplish readings and out-of-class assignments in preparation for successful completion of the course requirements.

**Undergraduate Classification**

Student level (class) is determined by the number of credits at CSU and credits accepted in transfer. Transfer credits may or may not be acceptable in meeting degree requirements.

**Student Level Semester Credits**

<table>
<thead>
<tr>
<th>Student Level</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>0-29</td>
</tr>
<tr>
<td>Sophomore</td>
<td>30-59</td>
</tr>
<tr>
<td>Junior</td>
<td>60-89</td>
</tr>
<tr>
<td>Senior</td>
<td>90 and over</td>
</tr>
</tbody>
</table>

**Enrollment Status**

Enrollment status (full-time, three-quarter time, half-time) is determined by the number of credits which the student has completed or is pursuing for the term in which the verification is requested. Courses from which the student has withdrawn or is auditing are not included. The following schedule for enrollment status differs from the full-time/part-time schedule for tuition and fees (http://Registrar.colostate.edu/student-resources/tuition-fees).

Credit requirements are as follows:

**Fall/Spring/Summer Semesters:**

**Undergraduate Students**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>12 or more credits</td>
</tr>
<tr>
<td>Three-quarter time</td>
<td>9-11 credits</td>
</tr>
<tr>
<td>Half-time</td>
<td>6-8 credits</td>
</tr>
<tr>
<td>Less than half-time</td>
<td>5 credits or less</td>
</tr>
</tbody>
</table>

**Graduate Students**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>9 or more credits</td>
</tr>
</tbody>
</table>
then have a 24-hour window to register for the class. If the student does not register, they are taken off the waitlist and a notification goes to the next student on the waitlist.

Please go to RAMweb (https://ramweb.colostate.edu) or the Registrar’s webpage (http://registrar.colostate.edu) for frequently asked questions and answers about the Registration Waitlist.

Course Overrides

Even when a class has reached its published enrollment limit, the instructor may give special permission for a student to register in the course. Students should inquire about overrides with the instructor assigned to teach the class or the department offering the class. Overrides are processed electronically via ARIESweb by the instructor or department offering the course. Once granted an override, the student must still register for the course through RAMweb (https://ramweb.colostate.edu). To do so, the student will need to manually enter the CRN (course reference number) into the Add Classes Worksheet in RAMweb.

Credit Overload

Undergraduate students who wish to register for more than 18 credits per term must have an overload approved and submitted through ARIESweb by their advisor. Requests for undergraduate students to register for 21 or more credits in a given term must be approved by the department chair/department head.

Graduate students who wish to register for more than 15 credits per term must also have an overload approved and submitted through ARIESweb by their advisor. Requests for graduate students to register for 19 or more credits requires approval from the Graduate School.

Variable Credit Course Registration

Some courses, such as research or field placements, are available for variable credits. Learn more about adjusting variable credits on the Registrar’s Office website (http://registrar.colostate.edu/registration/registration-changes).

Auditing a Class

Students who are interested in learning content of a course but who don’t need it to count toward graduation may choose to audit the course, if the option is available. Learn more about auditing a course.

Late Registration

A Late Registration Charge of $50 (subject to change) is assessed for adding the first course on or after the first day of classes or for late adds after the registration period.

Graduate students who register for Continuous Registration or their first course for the term on or after the first day of the term will be charged a $50 Late Registration Charge.

Repeating a Course

Students may register for and complete a course more than once, but it can only be used one time to fulfill graduation requirements. The original grade and grades earned in repeated courses are used in calculating grade point averages, unless a student exercises the Repeat/Delete policy.

Repeat/Delete

Undergraduate students who retake courses have the opportunity to exercise the Repeat/Delete option. Students need to take steps to make this happen. Learn more about Repeat/Delete.

Enrollment and Degree Verification

For verification of enrollment status, term(s) of attendance, or degree awarded, go to RAMweb (https://ramweb.colostate.edu). Learn more at the Registrar’s Office (http://registrar.colostate.edu/student-resources/enrollment-degree-verification).

Schedule Changes

Schedule Changes and the Add/Drop and Withdrawal Periods

Periods for changing schedules (adds, drops, withdrawals, changes of sections, grading options, or credits) are listed in the Academic Calendar and in the online class schedule. Add, drop and withdrawal dates for specific sections may be located by clicking on the CRN (course reference number) in the class schedule. Once registered, those dates are also available on My Weekly Schedule, via RAMweb (https://ramweb.colostate.edu). Courses taught in terms of less than 16 weeks are subject to shorter add/drop and withdrawal periods.

Adding a class

During the regular 16-week Fall and Spring semesters, courses may be added without an override through 11:59 PM Sunday at the end of the first week of classes. Beginning Monday of the second week of classes, courses may be added with an electronic instructor override through the census date, which is the 12th day of classes of the semester. Course instructors may authorize their department offices to perform these overrides.

Dropping a class

Regular courses may be dropped through the census date, which is the 12th day of classes of the semester. Restricted-drop courses must be dropped before 11:59 PM Friday at the end of the first week of classes. Courses dropped during this period are not reflected on the student’s academic record, and tuition and fees may be adjusted as a result. Consult the appropriate online class schedule for course drop deadlines. No drops may be made after the end of the add/drop period.

Withdrawing from a class

The course withdrawal period begins after the add/drop period and closes at the end of the eighth week of the semester. A “W” (withdrawal) grade notation will be recorded on the academic record, except in the case of the 60-credit English composition and mathematics requirements (see the All-University Core Curriculum section for more detail on this requirement). See also Class Attendance Regulations. Tuition and fees will not be adjusted for withdrawals during the course withdrawal period. See also Tuition and Fees Adjustments in the Financial Information section.

Courses taught in terms of less than 16 weeks are subject to shorter add/drop and withdrawal periods. Click on the course reference number (CRN) to view a class’s specific add, drop and withdraw dates.

Students withdrawing from CSU may not use the drop procedure to drop all classes, but must instead complete the University Withdrawal process.
Registration Cancellation (Prior to Start of Term)
Prior to the beginning of the semester, all courses can be canceled via the web registration system on RAMweb (https://ramweb.colostate.edu) with no charge.

University Withdrawal
University Withdrawal refers to a student withdrawing from all classes for a given term, starting the first day of the term and on or before the last day of classes (before Final Exams week).

Any student interested in completing a University Withdrawal will do so, online, through RAMweb (https://ramweb.colostate.edu). Students are encouraged to discuss their plans to complete a University Withdrawal with the following, as applicable: advisor, Student Financial Services (http://sfs.colostate.edu), Veterans Education Benefits Office (http://registrar.colostate.edu/military-veterans-benefits), Student Athlete Support Services (http://www.sass.colostate.edu), International Student and Scholar Services (http://iss.colostate.edu), CSU Online (http://www.online.colostate.edu), and the Graduate School (http://graduateschool.colostate.edu).

University Withdrawal for Call to Active Duty

 Called to Active Military Duty
CSU will assist any student called to active military service with reasonable accommodations and in making the best possible transition. As a primary point of contact, students are encouraged to work with Adult Learner and Veterans Services (ALVS) (http://alvs.colostate.edu) and the Center for Advising and Student Achievement (CASA) (http://www.casa.colostate.edu) in order to review all options prior to leaving CSU. Depending on when in the semester the student is called to duty, different options may be available including University withdrawal, late withdrawals, or incompletes.

If the student chooses to withdraw from CSU as a result of the amount of time required away during military service, upon presentation of military orders, the tuition paid for the semester will be refunded. All students should request a University Withdrawal on RAMweb (https://ramweb.colostate.edu) and then contact CASA to present their military orders.

If most of the semester in which a student is called to active duty is complete, the student may work with individual instructors to assess whether or not incompletes are a viable option. ALVS will assist students in this process. At the discretion of the instructor, a temporary grade of “I” may be assigned to a student passing a course. The student and instructor will complete a contract for course completion. The student called to military duty will have an extended time allowed for course completion, that being one full year after the student has returned to CSU. There are no refunds associated with receiving incompletes and no fees associated with completing those courses.

Students encountering a different scenario during the semester, such as being gone for a limited amount of time, are encouraged to work with ALVS in order to work out reasonable accommodations in her/his courses or selected withdrawals from individual courses.

University Withdrawal for Call to Active Duty:
1. To complete a University Withdrawal a student should do so online, through RAMweb (https://ramweb.colostate.edu). For more information, contact the Center for Advising and Student Achievement (http://www.casa.colostate.edu) (CASA) located in the TILT Building, 801 Oval Drive, to meet with an advisor. Walk-in hours are Monday through Friday, 10:00 to 2:00. If you prefer, you can make an appointment by calling (970) 491-7095.
2. After requesting the University Withdrawal online, present your orders to CASA so that the tuition appeal can be expedited at that time. If you do not have your orders with you, then you can fax the orders to CASA at (970) 491-1133. When CASA receives the orders, your tuition assessment will be adjusted to 0%.
3. If you are deployed between academic terms (for example, at the end of the semester or over the summer), you do not need to contact CASA to withdraw; however, you do need to be sure you have cancelled your registration for the upcoming term.
4. Graduate students: Please be sure to review your options for Continuous Registration versus the Graduate Form IB (Graduate Application for Readmission) as you make arrangements for your deployment.
5. Short-term deployments may not require a University Withdrawal, depending upon the length of the deployment and when in the semester it occurs. Students given orders for a short-term deployment should work directly with their instructors, who are strongly encouraged to accommodate deployed students with a reasonable plan for making up work. Students who are advised they may be assessed a penalty for the absence should contact Adult Learner and Veteran Services (http://alvs.colostate.edu) (ALVS) to discuss their options. If you have any questions about the withdrawal process, be sure to speak to a CASA advisor.

To return to CSU (whether you were deployed during the academic term or between terms):
1. Returning undergraduate students should go to the Admissions (http://admissions.colostate.edu/returningstudents) website for information on the Undergraduate Intent to Return process.
2. The Intent to Return form asks you which semester you plan to return to CSU. As soon as you know when you will return, you should submit the form so that you can register for classes in a timely manner. Please note the relevant application deadline (http://admissions.colostate.edu/returningstudents). Keep your academic advisor apprised of your plans—by phone or email if necessary—so that your advisor can make sure that you have a schedule figured out for your returning semester.
3. Returning graduate students who have not utilized Continuous Registration must complete and submit a Graduate School Form 1B (http://graduateschool.colostate.edu/documents/GS1B.pdf) (Graduate Application for Readmission) and a copy of the deployment orders in order to have the $150 readmission fee waived. Important note: If you were admitted to CSU and were not able to enroll due to deployment, you may be required to submit a new application for admission and new supporting documents depending upon your original term of admission. Enrollment deferrals of up to one year beyond the original term of admission are allowed in such cases but must be arranged in advance; deadlines apply.

If you have questions about the return process (for enrolled students) or about obtaining an enrollment deferral (for newly admitted students), please contact the Office of Admissions at admissions@colostate.edu.

Retroactive Withdrawal
A student may request that all grades in an academic period (one or more semesters of continuous enrollment) be retroactively removed and be replaced by entries of “W” on his or her transcript. A retroactive withdrawal may be granted only when a student could neither function
normally during the academic period nor be reasonably expected to complete a university withdrawal due to extenuating circumstances such as an incident leading to major physical or mental trauma.

Failure to academically perform due to factors such as the following would not generally qualify a student for retro-active withdrawal:

- Bad habits or poor judgment
- Time management issues
- Failed relationships/roommate problems
- Failure to use University resources
- Ignorance of University policies

A retroactive withdrawal is not allowed if a student has earned a degree from CSU and the semester in question was used to meet University, college, or departmental requirements for the degree. Generally, requests are not allowed after four years have elapsed since the end of the last semester covered by the request.

Students are allowed two requests for the same period, the second request requiring additional supportive documentation. If granted, assessment of tuition and fees remains unchanged. The student’s academic record will remain unchanged if a request is denied.

An undergraduate or graduate student applying for a retroactive withdrawal must submit an online request with supportive, professional documentation from a credible source. The request will be forwarded to the Faculty Council Committee on Scholastic Standards. In order to start the process, students must meet with their department academic support coordinator or advisor or an advisor from the Center for Advising and Student Achievement (CASA). To make an appointment at CASA, phone (970) 491-7095 or walk-in to TILT (The Institute for Learning and Teaching), Room 121, 801 Oval Drive on campus.

Undergraduate Planned Leave

Undergraduate Planned Leave is a status intended to help students more easily and effectively take one semester away from their CSU studies and successfully return again. Students who obtain Planned Leave status and comply with its requirements do not have to re-apply for admission to CSU upon return. In addition, Planned Leave students will be tracked in an attempt to help facilitate their successful and timely return. For more information, see Undergraduate Planned Leave in Academic Standards and Policies.

Graduate Continuous Registration

All students admitted to a graduate degree program are required to be continuously enrolled in their degree programs in the fall and spring semesters. This policy applies from the time of first enrollment through the graduation term. Students should contact their advisor if they do not plan to register for at least one credit of course work or research. Learn more about Continuous Registration.

Registration Alternatives

Auditing a Class

See Auditing a Class in Grading.

Non-Degree GUEST Program

GUEST is a non-degree enrollment option for community members who wish to take one or two CSU classes during a fall or spring semester without applying for admission as a degree-seeking student. Learn more about applying for admission (http://admissions.colostate.edu/guest) to the GUEST program.

CSU Online/Continuing Education

Taking online courses is an appealing option for many students. CSU Online (Continuing Education) offers access to individual courses, full degree programs, and graduate certificates. Learn more at CSU Online (http://www.online.colostate.edu).

Lifelong Learners

CSU is supportive of lifelong learners. Community members age 55 or older may attend academic classes, free of charge, on a space-available basis with permission of the instructor. As visitors, lifelong learners are not registered for the classes, have no academic record of attending, and earn no academic credit. Learn more at the Registrar’s Office website (http://registrar.colostate.edu/forms/senior-citizen-class-visitation-request-form).

Taking Courses at Another Institution

Enrolled students who wish to take undergraduate courses at another institution to transfer to CSU should first determine how the courses will be accepted in transfer. To do so the student will need to access the Transferology (https://www.transferology.com/login.htm)™ website. For more information about Transferology™ please see the Registrar’s Office website (http://registrar.colostate.edu/transfer-credit).

If Transferology™ does not list the desired course or its institution, or it shows an equivalent course different from what the student is seeking, the student may petition a department to approve a course equivalent using the Transfer Course Equivalency Pre-Approval Form, available on the Registrar’s Office website (http://registrar.colostate.edu/transfer-credit/csustud-courses-elsewhere). The appropriate academic department must determine if a course can be accepted as the desired equivalent. Upon approval, the student returns the signed form to the Registrar’s Office prior to transferring the course.

Students wishing to take courses at an international institution will need to have the Registrar’s Office evaluate the courses to determine how they will be accepted in transfer. To do so, the student must supply the Registrar’s Office with a copy of the course description and/or syllabus of each course they wish to take in English by email at internationalevaluation@colostate.edu, by fax at (970) 491-2283, or in person in Centennial Hall.

Students are responsible for ensuring an official transcript is sent to the Registrar’s Office after the completion of the off-campus course work. No credit will be evaluated until an official transcript has been received. Courses with less than a C- grade are not accepted as transfer credit toward a degree at any time, in any major.

The student must file an Intent to Return form with the Office of Admissions prior to leaving campus if the course work is taken in any term other than summer session.

See also Education Abroad, in Interdisciplinary Opportunities.

Credit for Education Abroad

Students are encouraged to participate in accredited education abroad programs. Credit is granted for courses taken in programs approved in advance by CSU, subject to certain conditions. To apply for credit, a student must process an “Education Abroad Transfer Credit Form” available in the Education Abroad Office, Laurel Hall.
Aims Community College Cooperative Registration Agreement
Under a cooperative program with Aims Community College (Greeley), CSU students may register for one course (maximum of five credits) per term without additional tuition assessment.

Eligibility – Students must be enrolled at CSU in resident instruction courses, i.e., not Continuing Education or Placement.

Credit Load – For the above corresponding terms, CSU students must be registered for at least 12 credits (9 credits in the summer) to attend Aims Community College.

Course Restriction – Registration for a maximum of one undergraduate, resident instruction course (maximum of five credits) is authorized. Registration will be subject to the availability of the course and the student meeting the prerequisites.

Tuition – Tuition and student fees for the course taken under this agreement will not be charged to the eligible student but applicable course fees will be paid by the student. If the student is determined to be ineligible for this cooperative registration privilege, applicable tuition and student fees will be assessed, and the student will be responsible for payment of these charges.

Registration – Applicable forms are available on the Registrar’s Office website (http://registrar.colostate.edu/academic-resources/exchange-programs) or in the Registrar’s Office in Centennial Hall.

CSU does not have a registration agreement with Front Range Community College.

Colorado Exchange Program
CSU, in cooperation with the Colorado School of Mines, University of Northern Colorado, and the University of Colorado, provides tuition-free instruction for graduate students through a reciprocal agreement. The following conditions must be met to qualify for the program:

1. The graduate student is registered and paying full tuition and fees at the home institution.
2. The course requested is part of a regular load—not an overload.
3. The student is pursuing a program leading to an advanced degree. All courses requested must be required for the degree program or a prerequisite for one of the required courses.
4. The course is not offered on the student’s own campus when that student can take advantage of it.
5. The request is presented prior to registration for the semester the course is to be taken.
6. The request is presented any term except the graduation semester.
7. A separate request form is completed for each course taken.
8. Space is available.

Additional information and registration forms are available on the Registrar’s Office website (http://registrar.colostate.edu/forms-2) or in the Registrar’s Office in Centennial Hall.

Challenging Colorado State Courses for Credit
The opportunity to challenge the content of a course on the basis of an examination may be permitted. This option is at the discretion of the individual department and may exclude courses where a laboratory or practicum is an integral part of the course being challenged.

A fee of $20 (subject to change) per credit attempted is assessed and is not refundable. Upon successful completion of an exam, a grade of S (satisfactory) is recorded on the student’s academic record. No record of unsuccessful attempts is recorded.

A course may not be challenged under the following conditions:

• To satisfy the residence requirement for graduation.
• When the person seeking credit is not currently registered at Colorado State University at the time the examination is administered.
• When a student has previously failed a placement or challenge exam for the course.

Students wishing to establish credit by challenge may obtain information from the University Testing Center (http://testing.colostate.edu) at (970) 491-6498, General Services Building, Room 203.

Degree Requirements

• Undergraduate
• Graduate

Undergraduate

Credit Requirements
Graduation credit requirements, outlined in detail below, include the following: a minimum of 120 credits, 42 of which need to be upper-division. Thirty of the 42 upper-division need to be taken "in residence" or at CSU. And, 15 of the last 30 credits need to be taken "in residence".

Major Requirements
The student wishing to graduate must complete the requirements for a major and the All-University Core Curriculum. A major is a sequence of courses in a subject-matter area or discipline which, when accompanied by appropriate supporting courses, leads to a degree. A minimum of 27 semester credits constitutes a major. Completion of a major is shown on both the student’s diploma and academic record. Students may elect to complete the requirements for two or more majors. To graduate with more than one major, students must complete all the requirements for each major (some majors will accept, as fulfilling their own category 4A-C requirements, the fulfillment of the category 4A-C requirements in another declared major the student completes). Common requirements may count in meeting the curriculum requirements for each major, but each major must have a minimum of 27 unique credits. Also see requirements for multiple degrees.

Concentration Requirements
Some majors have concentrations (or specialization areas). A concentration is a sequence of at least 12 semester credits of designated courses within a major designed to accommodate specific interests of students. Completion of a concentration is shown on a student’s academic record if completed in conjunction with a degree program, but is not noted on the diploma.

Options
Some majors have options which are a sequence of courses within a major or concentration of either guided electives or electives selected from areas of interest as approved by the student’s advisor. Options do not appear on diplomas or a student’s academic record. (Courses taken to complete an option do appear on the student’s transcript.)
Minor Requirements (Including Interdisciplinary Minors)
Minor programs of study are optional and are offered by certain departments. A minor consists of a minimum of 21 specified credits of course work outside the major. A minimum of 12 of the 21 credits must be course work at the upper-division level (300- to 400-level) and a minimum of 12 credits must be from course work within the department offering the minor. Minors are noted on the student’s academic record if completed in conjunction with a degree program, but not on the diploma.

Certificate
Undergraduate Certificates are optional and are offered by certain departments. An undergraduate certificate consists of a minimum of 9 specified credits, and not more than 15 credits. A minimum of 9 credits must be course work at the upper-division level (300- to 400-level). A student must earn a cumulative GPA of 2.000 or better in the courses required in the Undergraduate Certificate.

An Undergraduate Certificate may include courses from one or more departments. For certificates involving courses from two or more departments, the coordinating department is indicated in the list of Degree Programs.

Students must apply for and complete the certificate requirements while enrolled in their baccalaureate degree. Undergraduate certificates by title are noted on the student’s academic record (transcript) at the time of degree conferral. The undergraduate certificate title is not noted in the diploma.

Multiple Majors
Undergraduate Students With A Second Major

If both of the completed majors are of the same degree type (e.g., B.A., B.S., B.M., B.F.A.) and the student has fewer than 150 credits, the student will be awarded a single degree which displays all majors earned on one diploma.

If the completed majors are of a different degree type and the student has fewer than 150 credits, the student will be given the following choices at the time they file their graduation contract:

1. One diploma listing only the primary major’s degree type (e.g. B.A., B.S., B.M., B.F.A., B.S.W.) and listing all majors conferred.
2. One diploma listing The Bachelor of Arts and Sciences (B.A.S.) if one major is a B.A. degree type and another is a B.S. degree type (if this option is chosen the degree type of B.A.S. shows on the diploma and the official transcript along with both majors).

Students must complete degree requirements for the first (primary) major before they can graduate. Students who have declared two majors must complete all degree requirements for the second (secondary) major in order to graduate. If a student does not intend to complete the requirements of the second major then that major must be dropped before the degree can be conferred for the primary major.

Degrees Earned Concurrently

Students pursuing more than one major, who have successfully completed a minimum of 150 credits, completed a minimum of 27 unique credits for each major, completed major and AUCC category 1-3 requirements, and completed AUCC category 4A-C requirements for each major, will be conferred separate baccalaureate degrees resulting in separate diplomas.

Second Baccalaureate Degree Requirements

A student enrolling at CSU after previously graduating with one or more baccalaureate degree(s) or a student who has already earned one baccalaureate degree at CSU may earn an additional undergraduate degree in a different major if the following requirements are met:

1. Minimum of 30 semester credits in residence (after admission as a Second Baccalaureate student (http://admissions.colostate.edu/secondbachelorsapplicants)) beyond the credits earned at the time the student graduated with a previous baccalaureate degree.
2. All curriculum requirements for the new major, including All-University Core Curriculum Category 4 requirements and AUCC Categories 1-3E if applicable.
3. Minimum of 27 unique credits for the major not used toward completion of the previous baccalaureate degree.

The first or subsequent baccalaureate degree(s) may be from CSU or from another institution accredited by a regional institution accreditor recognized by the U.S. Department of Education, the Council for Higher Education Accreditation, or equivalent. Regionally accredited accepted coursework will fulfill the All-University Core Curriculum (AUCC) requirements with the exception of AUCC courses in category 4 that are required in the major. Baccalaureate degrees earned at an International Institution may lack components of the AUCC which could result in additional coursework beyond the major requirements to complete the degree.

Graduate

Learn more in the Graduate and Professional Bulletin.

Graduation Procedures and Information

- Undergraduate
- Graduate

Undergraduate Degrees

Student Bill of Rights

The Student Bill of Rights (also known as Colorado Revised Statute 23-1-125) notes that a student may formalize a plan to obtain a degree in four years. Colorado State University supports this timeline for graduation by publishing Major Completion Maps defining a common four-year course progression for most majors. (There are some majors a student may not be able to complete in eight semesters because of additional degree requirements recognized by the Colorado Department of Higher Education.)

Review CSU Major Completion Maps, for Undergraduate programs of study.

General Requirements

Students are required to complete all curricular requirements in place in the current catalog at the time of graduation, including the All-University Core Curriculum (AUCC) requirements.

The list of general requirements below is a sufficient guide for academic planning, but does not represent all rules which might apply to a particular student or program of study.
Graduation Procedures and Information

Checking undergraduate graduation requirements is the responsibility of the Registrar’s Office. Curriculum requirements are checked by the department head of the first major and the second major and/or minor if applicable.

Students planning on transferring coursework from another post-secondary institution in order to meet the requirements for degree completion should contact the Degree and Transfer Evaluation unit for assistance. It is very important that all grades/transcripts are received by the end of the 4th week after the semester has ended. If grades/transcripts are not received within this timeframe students will experience a delay regarding the formal posting of their official graduation for that semester as well as delays in printing their diploma.

A request for waivers or substitutions for major program requirements may be made if completing a curricular requirement:

1. Will extend the time normally required to complete the degree; or
2. Will force students classified as juniors or seniors to take additional lower-division courses, exclusive of AUCC requirements.

Requests for waivers or substitutions of the All-University Core Curriculum must be submitted on an appeal form (http://registrar.colostate.edu/forms/appeal-for-a-core-course-substitution), signed by the advisor and department head and turned in to the Degree and Transfer Evaluation unit of the Registrar’s Office. Ultimate responsibility for ensuring that AUCC curriculum requirements are observed and that substitution of equivalent courses or waivers are for good and sufficient academic reasons rests with the Provost/Executive Vice President.

Graduation Credit Requirements

To meet requirements for the bachelor’s degree, a student must fulfill:

**Minimum Credit Requirement**
A bachelor’s degree requires a minimum of 120 semester credits; however, individual programs in some colleges and departments may exceed the minimum.

**Minimum Grade Requirement**
Only credits completed with grades of A+, A, A-, B+, B, B-, C+, C, C, D, and S may count toward the graduation total. (Note: Grades of C-, D+, and D- earned at CSU prior to Fall 2008 apply to graduation requirements.) Some majors require a minimum grade of C or higher in required courses. For further information refer to your Undergraduate Degree Progress Audit (DARS) or contact the department offering the major.

**Cumulative GPA**
The minimum cumulative grade point average acceptable for graduation is 2.000 computed only for courses attempted at CSU. The CSU GPA calculation is carried to the third decimal place and is not rounded.

Total credits earned and counted toward graduation may differ from total credits used in computing a scholastic average, since the scholastic average is computed by dividing the total grade points at CSU by the total GPA credit including credits for grades of A+, A, A-, B+, B, B-, C+, C, C, D, and F. Note: Grades of C-, D+, and D- earned at CSU prior to Fall 2008 are applied to CSU GPA calculations.

**Upper-Division Credit Requirement**
A minimum of 42 semester credits in upper-division courses (300-400 level) is required of all students completing a bachelor’s degree program. Although 500-level courses cannot be required in undergraduate programs of study, elective credits taken at the 500 level may be used to fulfill the upper-division requirement.

**Use of 500-Level Courses Within an Undergraduate Program**
With written approval of an advisor, junior and senior undergraduate students may use 500-level courses to fulfill major requirements, either by selecting from an approved department list of courses, or by exception signed by the advisor. However, students are never required to take 500-level courses to complete an undergraduate program of study, whether a major or a minor. Courses at the 600-level are automatically excluded from use for an undergraduate degree. Undergraduate students may not enroll in courses numbered 700-799.

**Use of 500-level Courses Taken as an Undergraduate in Graduate Studies**
Undergraduates may apply a maximum of nine credits of graduate-level course work toward a graduate degree at CSU provided that such course work:

1. Is not used to meet bachelor’s degree requirements; and
2. Has been approved by the department head of the graduate degree program being sought.

Students who enroll in 500-level courses not applied toward a bachelor’s degree may request that an exclusion statement be placed on their academic records for those courses, making them potentially applicable to a CSU graduate degree. Students cannot exclude any courses below the 500-level under this policy. (See the Key to Courses of Instruction for additional information.) A written request must be filed in the Degree and Transfer Evaluation unit of the Registrar’s Office no later than the end of the term in which the excluded course is taken. Exclusion of these courses from the bachelor’s degree does not assure acceptance of this credit toward a graduate degree program. These excluded courses are computed in the undergraduate grade point average. Undergraduate students may not enroll in courses numbered 600-699 to satisfy undergraduate degree requirements. Undergraduate students may not enroll in courses numbered 700-799.

**In Residence Requirement**
A minimum of 30 upper-division semester credits must be completed in residence at CSU. “In residence” courses include any authorized Colorado State University course recorded as CSU credit on the CSU transcript. As an approved exception, “in residence” may also be satisfied by pre-approved upper-division credits earned in authorized study abroad programs and designated domestic exchange programs, if simultaneously enrolled in designated CSU courses. Pre-approval procedures are required.

**Senior Year Requirement**
Of the last 30 semester credits earned immediately preceding graduation, at least 15 must be completed at CSU.

**Academic Fresh Start Requirement**
Upon receipt of a Fresh Start, a student must successfully complete at least 30 upper-division credits of coursework in residence at CSU after the Fresh Start is granted in order to graduate.

**Degree Progress Audit (DARS)**
The Degree Progress Audit (DARS) is the degree audit tool used for verification of university, program, minor, options, and interdisciplinary requirements. The audit provides a dynamic and concise report, viewed in hard copy and over the web that is used for advising as well as for final graduation certification. The degree progress audit provides students with current and accurate transfer and course information to enhance
their degree and program planning. Students are able to view a “What-if” degree audit for display of how their credits would be used to fulfill another major’s requirements.

**Time Limitation on Credits**
Courses completed within the preceding ten years may apply toward a bachelor’s degree. After ten years, course work is reviewed by the department head and college dean or a designee to determine its appropriateness to the major requirements.

**Admission to Degree Program**
Students are required to be admitted into a degree-seeking program in the term for which they plan to graduate. Contact the Office of Admissions (http://admissions.colostate.edu) for application procedures.

**Intent to Graduate**
Students will file their Intent to Graduate during registration via the Registration Ready Tool in RAMweb upon completion of 85 credits. Students are prompted to verify their curriculum, their correct graduation term, and to give their desired name (within reason) for the commencement program as well as their diploma.

**Contract for Completion of a Major or Minor**
Students seeking to graduate must complete a graduation contract for each major and minor in which they are enrolled. Graduation contracts must be completed and signed by the Friday of the second week of classes of the student’s graduation term. Graduation contracts consist of the most updated version of the Degree Progress Audit (DARS), which will be used for final graduation certification, and will be signed in consultation with the student’s advisor(s) at each department where the student is enrolled in a major or minor program of study. Students who do not complete the degree requirements in their graduation term must sign another contract or contracts at the beginning of the term in which all requirements will be completed.

**Good Standing Status**
A student must be in good standing to receive a CSU degree. Accordingly, any student who is subject to suspension or probation for scholastic or disciplinary reasons will not graduate until the conditions of suspension or probation have been satisfied.

**Off-Campus Completion of Degree Requirements**
Seniors who are registered for final course work at another institution, either in residency or by correspondence or extension, must have their Contracts for Completion of Major/Minor on file in the Registrar’s Office by the end of the add/drop period of the graduation term. Official transcripts showing completion of work from another institution must be on file in this office no later than the fourth week after the graduation term.

**Degree Conferral**
Degree conferral only occurs three times each year, after the conclusion of the Fall, Spring, and Summer terms. The conferral date is the date which will be posted on the official transcript and the diploma. This is the date when the degree is considered officially awarded. A degree is a credential. There are three documents that provide evidence of that credential: an official transcript, a diploma, and a formal letter of completion from the Registrar’s Office.

CSU degrees will not be posted on the student’s record until the official degree conferral date has been reached for the semester in which the degree is being awarded. Completion of all requirements prior to the official degree conferral date will not result in an early conferral of the degree. A student in this situation may request an official “Upon Completion Letter” from the Registrar’s Office showing pending conferral of the degree. The degree will be conferred for the term in which the requirements are completed.

**Degree Verification Process**
To confirm that a degree has been awarded, the most common options are through use of the official transcript or, for students, receipt of the diploma. In addition, many employers access the Degree Verification process (http://registrar.colostate.edu/student-resources/enrollment-degree-verification) through the National Student Clearinghouse.

**Degrees Awarded Posthumously**
In exceptional circumstances, the Board of Governors of Colorado State University may award degrees posthumously. Recommendations for such an award will only be considered when the student had completed nearly all of the requirements for his or her degree before dying, and when the student’s academic record clearly indicates that the degree would have been successfully completed had death not intervened. Nominations for posthumous awards of degree will be initiated by the student’s department and approved internally by the relevant college dean and the Provost/Senior Vice President. The posthumous nature of the recommended degree award shall be made explicit when the recommendation is forwarded to the Board of Governors. The Provost/Executive Vice President’s Office shall be responsible for presenting the degree to appropriate survivors.

**Commencement (Graduation Ceremonies)**
Students may graduate in Fall, Spring, or Summer terms. CSU celebrates at Commencement ceremonies (http://commencement.colostate.edu) twice a year, at the end of each Fall and Spring semester. Students completing degree requirements during any term receive their diplomas by mail within 6-8 weeks after the degree conferral date, if there is no outstanding financial obligation to the University. Candidates must appear in appropriate academic attire at commencement exercises.

**Graduate Degrees**
The graduation procedures and information for Graduate Students is available in the Graduate and Professional Bulletin.
CO-CURRICULAR ENGAGEMENT

- Student Leadership
- Research and Creative Opportunities
- Athletics
- Fraternity and Sorority Life
- Student Leadership, Involvement and Community Engagement (SLiCE)
- Student Clubs and Organizations
- Student Media

Student Leadership

- A member of Campus Compact, CSU promotes programs that develop citizenship skills and values, including service learning and partnerships between the campus and community. CSU has been named a “Top Character-Building Institution” by the Templeton Foundation. CSU encourages students to explore the many opportunities to enhance learning by getting involved on campus and in local communities.

- Associated Students of CSU (ASCSU)
- Graduate Student Council
- College Councils
- President’s Leadership Program (PLP)
- Honorary Societies
- Campus Connections

Associated Students of CSU (ASCSU)

All fee-paying CSU students are members of Associated Students of Colorado State University (ASCU), the student governing body that promotes the interests and welfare of the students at the city, state, and federal level. ASCU’s president is the student representative on the Board of Governors, CSU’s governing body. ASCU comprises three main branches: Legislative, Executive, and Judicial. ASCU represents the student population that makes up their specific colleges, as well as the Graduate School Council. ASCU offers programs and services to all CSU students. Examples include Ram Road Trips, Ram Leadership Team, Grill the Buffs, and the For-Ever-Green shirt program.

Graduate Student Council

Formal student involvement in the Graduate School proceeds through the Graduate Student Council (http://graduateschool.colostate.edu/campus-life/get-involved). The Student Council consists of one student representative and one alternate from each department offering programs leading to advanced degrees. The Council elects its own officers and nominates graduate students for memberships on Faculty Council and Graduate School committees.

College Councils

Students who have declared a major can contact their Dean’s Office in order to find out more about the College’s Student Council (http://ascsu.colostate.edu/involvement) and the leadership opportunities it may afford. Students who have not declared a major should contact the Center for Advising and Student Achievement to get information about the Undeclared Leadership Council.

President’s Leadership Program (PLP)

The President’s Leadership Program (http://slice.colostate.edu/plp.aspx) is a fourteen credit leadership development experience consisting of three independent year-long (two semester) academic and experiential courses designed to explore the personal, organizational, and social dimensions of leadership through course-work, retreats, and service learning. Students must apply and be selected to participate in each year of the program. Successful completion of PLP can contribute to an interdisciplinary minor in leadership studies.

Honorary Societies

By promoting, advancing, and recognizing the top scholars of our campus community, honorary societies (http://provost.colostate.edu/honorcsu) assist students in their pursuit of academic excellence. Students are advised to exercise caution when accepting invitations from honor societies. Not all such organizations provide honors that will be recognized and valued by the academic community and potential employers.

Campus Connections

Campus Connections (http://www.hdfs.chhs.colostate.edu/students/undergraduate/campuscorps) is a high-impact service learning course at CSU where undergraduate students serve as mentors to at-risk youth. Students from over 90 different majors work one on one with at-risk youth ranging in age from 11-18 who are referred to Campus Connections from our community partners within the juvenile justice system of Larimer County, local schools, community agencies, and directly from families.

Research and Creative Opportunities

Qualified undergraduate students have many opportunities to engage in research and creative activity while enrolled at CSU. These opportunities allow students to enhance their education by working closely with a faculty mentor. Settings for these activities include laboratory, office, concert hall, and studio environments on campus. Some opportunities exist off campus, as well, at state and national laboratories located in and near Fort Collins. Students can identify faculty research and creative activity by contacting the Office of Undergraduate Research and Artistry (http://tilt.colostate.edu/oura) at The Institute for Learning and Teaching, by searching departmental websites, or by contacting advisors or college and departmental offices. Students can then contact faculty who are willing to enlist undergraduates in their research and creative work. The amount of time spent in such activities varies but generally ranges from six to ten hours per week on average. Placement, time commitments, and qualifications are dependent upon an agreement between the student and faculty mentor.
More than 300 performances, exhibits, and arts events are staged each year, from an internationally-recognized poster show to student-produced theater and opera. Facilities include the Hatton and Curfman Galleries, the Music Recital Hall, and the Lory Student Center Theatre. The University Center for the Arts houses the Edna Rizley Griffin Concert Hall (listed by the Denver Post as one of the top five places for live chamber music), the University Theatre, the Studio Theatre, the Runyan Music Hall, production support facilities, recital and rehearsal halls, dance performance space and studios, classrooms, and faculty offices. The campus culture at CSU is steeped in the performing arts.

- Celebrate Undergraduate Research and Creativity Showcase
- MURALS

**Celebrate Undergraduate Research and Creativity Showcase (CURC)**

The achievements of students in the areas of research and creativity are recognized each spring semester during CURC (http://curc.colostate.edu). Students are invited to participate in a variety of events focused on original research, creative arts, and design, culminating in a showcase that features outstanding performers and award winners from all disciplines. Award winning projects from recent years ranged from genetic and neural studies to improvements in the apparel design process to poetry.

**MURALS**

Multicultural Undergraduate Research Art and Leadership Symposium (MURALS), intentionally reaches out to students of color in a variety of disciplines in preparation for CURC (see above).

Mentoring, presenting their work (creative writing, visual art, performing art, science, social science, humanities), networking, and learning about multicultural leadership are four main aspects of the symposium.

Slated for Spring, MURALS also provides opportunities for graduate students to work with undergraduate students and for faculty to serve as mentors.

**Athletics**

- Intercollegiate Athletics
- Sport Clubs
- Intramural Sports

**Intercollegiate Athletics**

McGraw Athletic Center

(970) 491-5300

CSU recognizes intercollegiate athletics (http://csurams.com) as an integral part of its mission; therefore CSU is committed to the pursuit of excellence with integrity in athletics.

CSU is a member of Division I-FBS of the NCAA and competes in the Mountain West Conference. Other conference members include Boise State University, San Diego State University, the United States Air Force Academy, University of Nevada at Las Vegas, University of New Mexico, University of Hawaii (football only), University of Wyoming, San Jose State University, Fresno State University, University of Nevada, and Utah State University.

CSU sponsors men’s intercollegiate competition in basketball, cross country, football, golf, and track (indoor and outdoor). It sponsors women's intercollegiate competition in basketball, cross country, golf, soccer, softball, swimming/diving, tennis, track (indoor and outdoor), and volleyball.

A strong intercollegiate athletic program gives talented student-athletes the opportunity to develop their physical, intellectual, and leadership skills as they participate in all aspects of college life, represent their school in athletic competition and in the community, and pursue college-level studies to prepare themselves for meaningful careers. Therefore, the Department of Athletics’ administrators and coaches are expected to recruit qualified student-athletes who can succeed academically and athletically and who will represent CSU responsibly and with integrity. Administrators, coaches, faculty, and staff are obligated to encourage and help student-athletes balance the demands of athletic participation with those of the classroom and to assist them in achieving success in both their sport and their chosen field of study. They are also obligated to guard the physical and mental well-being of student-athletes and refrain from doing or encouraging anything that would jeopardize the health or welfare of the participants.

Intercollegiate athletics can foster a sense of loyalty, community, and support among students, faculty, staff, alumni, and friends. CSU subscribes fully to the principles of fair play. It will at all times insist that its athletic program and everyone connected with it uphold the laws, rules, and regulations governing intercollegiate athletics.

The Department of Intercollegiate Athletics is supervised by the Director of Athletics, who reports to the University President. The Faculty Council Committee on Intercollegiate Athletics serves in an advisory capacity to both the President and the Director of Athletics. Regulations for the conduct of intercollegiate athletics conform to those established by the Mountain West Conference and the NCAA.

Student-athletes participating in intercollegiate athletics must comply with all eligibility and academic requirements of CSU, the Mountain West Conference, and the NCAA, and are expected to make consistent and satisfactory progress towards completion of their degree programs. Student-athletes are also required to conduct themselves in conformance with the department’s specific expectations in the areas of academics, athletics, and social and outreach activities.

**Sport Clubs**

Sport clubs are student-run competitive sport organizations that compete with other colleges and provide the opportunity to play for national championship sport club titles. For additional information, contact Campus Recreation (http://campusrec.colostate.edu).

**Intramural Sports**

Campus Recreation’s Intramural Sports Program (http://campusrec.colostate.edu/programs/intramural-sports) seeks to engage the CSU campus community through opportunities to participate in any number of structured, inclusive, recreational sport-related activities throughout the year. The goal is for every participant to have fun!

**Fraternity and Sorority Life**

Office in Lory Student Center

(970) 491-0966
The Office of Fraternity and Sorority Life (http://fsl.colostate.edu) (OFSL) provides resources and support to social fraternities and sororities at CSU as well as advising to fraternity and sorority governing councils and auxiliary organizations. The OFSL conducts leadership training, provides accountability, and supports individual chapters as they enhance their curricular experience with fraternity or sorority involvement.

Office in Lory Student Center, Room 210  
(970) 491-1682

With a variety of leadership and community engagement programs, the Student Leadership, Involvement, and Community Engagement (http://slice.colostate.edu) (SLiCE) office at CSU provides an important link between students and their surrounding communities. SLiCE brings together student organizations, student leaders and student volunteers under one umbrella; making the campus a better community and a more involved place. Being involved in SLiCE programs allows students to enrich their academic and social experience at CSU. The office also assists recognized student organizations in obtaining official university recognition, program planning, public relations, financial/budgetary matters, and leadership development for organizational officers, members, and advisors. More than 400 campus organizations reflect interests such as academic, political, religious, sport clubs, programming/service, governance, social, Greek, and special interests.

Student Clubs and Organizations

When students look back at their college experience, they often think beyond the books, papers, and exams. They remember what they did, who they met, and how they felt. With over 400 student clubs and organizations, getting involved can be fun, easy, and a transformational way to make the most of your Ram experience. Whether it’s competing in a sport club, joining a fraternity or sorority, focusing on cultural awareness, volunteering through service teams, or taking up a new hobby – there is something for every Ram to enjoy! Check out CSU’s registered student organizations via RamLink (http://www.ramlink.colostate.edu). If you do not find the perfect fit, the office of Student Leadership, Involvement and Community Engagement (http://www.slice.colostate.edu/organizations.aspx) will help you start your own student organization. So get involved, stay connected, and make the most of your time.

Student Media

Office in Lory Student Center, Room 118  
(970) 491-1683

RMSMC is a not for profit educational media organization created in 2008 by the Board of Governors of the Colorado State University System. RMSMC operates with an independent Board of Directors consisting primarily of CSU students, two community members, and a representative from both the Vice President for Student Affairs and the Chair of the Department of Journalism and Media Communication.

Mission Statement

The RMSMC is dedicated to community service and enhancing the educational mission of Colorado State University by empowering, training, and equipping students to excel in journalistic and other media methods, ethics, critical thinking, and management.

The primary goals of the RMSMC are to:

- Commit to uphold truth, fairness, integrity, independence, accountability, accuracy, professionalism, and minimizing harm as stated in the RMSMC’s codes of ethics;
- Create and maintain a welcoming environment and diversity in staffing, media content, and access through responsiveness and outreach;
- Empower students through training and practical experience to become thoughtful, ethical, and skilled media producers;
- Operate in a socially and financially responsible manner;
- Protect student control over media content, free from prior restraint or censorship;
- Recognize both the unique characteristics of each medium and the value of working together to maximize benefits for listeners, viewers, and readers;
- Remain abreast of media technology, equipment, and training to provide students with the necessary tools to succeed; and,
- Serve the community by delivering relevant and timely news, information, and entertainment, and maintaining the public trust by ensuring the public’s business is conducted in an open and transparent manner.
ACADEMIC SERVICES AND STUDENT SUPPORT

- Diversity Resources for Students
- Student Resources and Campus Life
- Academic Services and Programs
- INTO-CSU
- Administrative Resources
- Facilities

Diversity Resources for Students

- Academic Advancement Center/TRIO Student Support Services
- The Access Center
- Adult Learner and Veterans Services
- Asian/Pacific American Cultural Center
- Assistive Technology Resource Center
- Black/African American Cultural Center
- Comprehensive Academic-Related Program for Graduate Students of Color
- El Centro
- First Generation College Students
- Gay, Lesbian, Bisexual, Transgender, Queer, Questioning and Ally Resource Center
- Native American Cultural Center
- Office of Equal Opportunity
- Office of Vice President for Diversity
- Resources for Disabled Students
- Women and Gender Advocacy Center

Academic Advancement Center/TRIO Student Support Services

Office in L.L. Gibbons Building, Room 117
(970) 491-6129

The Academic Advancement Center (http://aac.colostate.edu) provides academic support for eligible participants including: Academic coaching, tutoring, facilitated group study, study and life skills strategies instruction, peer mentoring, career planning, study abroad information, and student involvement and leadership opportunities. Program eligibility criteria include: Neither parent has a bachelor’s degree, and/or meets low-income criteria, and/or student has a disability, and is a U.S. citizen or legal resident. Applications are available at the AAC, L.L. Gibbons Building, Room 117 or online.

The Access Center

Office in Student Services Building, Room 304
(970) 491-6473

The Access Center (http://accesscenter.colostate.edu) programs provide outreach services and support to first-generation, low-income students in their pursuit of postsecondary education. Access Center programs assist students in developing the academic skills and motivation needed to successfully complete high school and to enter college upon graduation. Students receive academic advising; tutoring and support; academic, career planning and exploration; college and financial aid counseling; financial literacy; weekend study skills workshops; engagement in summer programs and institutes; and opportunities to visit colleges and universities. Students are engaged in educational, cultural, and social experiences that will help prepare them to enter and succeed in college. The Access Center provides services to students in grades 6th – 12th, and to adults that have an interest in preparing for college, completing high school equivalency programs, transferring between universities, or continuing their postsecondary education programs. The programs provide information on vocational, two and four-year colleges/universities and seek to make systematic changes in select communities by increasing the number of individuals with postsecondary degrees. The Access Center programs accomplish this by demystifying the importance, access, and attainability of higher education.

Adult Learner and Veterans Services

Office in Lory Student Center, Room 288
(970) 491-3977; FAX: (970) 491-3906

Adult Learner and Veteran Services (http://alvs.colostate.edu) (ALVS) supports the transition, education, leadership, and engagement of Adult Learners and Student Veterans to strengthen their academic achievement and holistic development. Adult Learners are students who do not fit the characteristics of a traditional college student, including but not limited to students with dependents and veterans. ALVS facilitates the success of students through individual meetings, resource referrals, and engagement programs. The ALVS office includes a student lounge that promotes networking, community building, and access to resources.

Asian/Pacific American Cultural Center

Office in Lory Student Center, Room 333
(970) 491-6154

The Asian/Pacific American Cultural Center (http://apacc.colostate.edu) (A/PACC) provides programs and services to support the retention, graduation and success of students. A/PACC runs educational and volunteer programs to help spread awareness of Asian American culture and build community among Asian Americans, Pacific Islanders, and their allies. The Center welcomes all students and seeks to create a safe place for students of all backgrounds. The Center contributes to an inclusive campus environment by providing resources for Asian/Pacific American awareness, education, and identity development.

Assistive Technology Resource Center

Office in Occupational Therapy Building, Room 302
The Assistive Technology Resource Center (http://atrccolostate.edu) (ATRC) ensures equal access to technology and electronic information for CSU students and employees with disabilities. Services include assistive technology assessments and training, as well as consultation and education regarding accessibility and universal design of mainstream and instructional technologies.

**Black/African American Cultural Center**  
Office in Lory Student Center, Room 335  
(970) 491-5781

When you are in this open environment, surrounded by diverse people, you know you’re in a home away from home; you know you are in the Black/African American Cultural Center (http://baacc.colostate.edu) (BAACC) office! Full of life and a sense of community, BAACC provides educational programs, opportunities to socialize, mentorship, community service, leadership, professional development, and an academic environment. BAACC helps you network while getting involved on campus, building strong relationships, and experiencing new things throughout your college career. Next time you’re curious about visiting our office, do not walk on by – walk in! We are unique individuals with varying goals and different struggles: all destined for success.

**Comprehensive Academic-Related Program for Graduate Students of Color**  
Office in Student Services, Room 108  
(970) 491-6817

Comprehensive Academic-Related Program (http://www.graduateschool.colostate.edu/diversity/agep/index.aspx) (CAP) is a formalized program that highlights resources on campus, offers professional development activities and provides access to faculty mentors, while also supporting additional socialization activities to encourage professional networks.

**El Centro**  
Office in Lory Student Center, Room 225  
(970) 491-5722

El Centro (http://elcentro.colostate.edu) provides an energetic, welcoming, and inclusive environment. We have resources to support personal, professional, social, cultural, and academic needs of all students who want to become involved with El Centro. We offer a place for discovering and appreciating diverse heritages, traditions, and cultures. Student can visit El Centro to relax, socialize, laugh, engage in dialogue, and build life-long memories. El Centro is a family, a “home away from home,” a place that provides a sense of belonging.

**First Generation College Students**

First generation college students are defined as students whose parents have not earned a bachelor’s degree. CSU is proud of the success of our first generation college students. Learn about the history of first generation college students at CSU (http://www.colostate.edu/features/first-generation.aspx). The Center for Advising and Student Achievement (http://osp.casa.colostate.edu/first-generation-award-program.aspx) (CASA) coordinates the first generation award. The Academic Advancement Center (http://www.aac.colostate.edu) (AAC) provides tutoring and support resources for first generation college students.

**Gay, Lesbian, Bisexual, Transgender, Queer, Questioning and Ally Resource Center**  
Office in Lory Student Center, Room 232  
(970) 491-4342

The Gay, Lesbian, Bisexual, Transgender, Queer, Questioning and Ally Resource Center (http://glbtrc.colostate.edu) supports and affirms the diverse identities and lives of lesbian, gay, bisexual, transgender, queer, questioning (LGBTQ), Two-Spirit, and same-gender loving people as individuals and as groups, especially as students, staff, and faculty of CSU and their families, friends, and allies, through the cultivation of safe space, educational outreach, advocacy, increased visibility of LGBTQ issues, information and referral resources, and academic and leadership opportunities.

**Native American Cultural Center**  
Office in Lory Student Center, Room 327  
(970) 491-1332

The office of Native American Cultural Center (http://nacc.colostate.edu) (NACC) was established in 1979. The four primary advocacy and service areas include recruitment, retention, graduation, and community outreach. The office embraces and encourages a supportive environment based on the traditions and cultures of Native American peoples.

**Office of Equal Opportunity**  
Office in Student Services, Room 101  
(970) 491-5836

The Office of Equal Opportunity (http://oeo.colostate.edu) (OEO) is charged with implementing, monitoring and evaluating programs, activities and procedures that support this commitment.

The following are key programs and activities of OEO:

- Monitor and support CSU compliance with federal and state laws and CSU policies prohibiting discrimination and harassment.
- Develop and implement CSU’s affirmative action program.
- Oversee CSU’s search and selection process for all Academic Faculty and Administrative Professionals.
- Work in conjunction with Human Resources in the hiring process used for State Classified employees to ensure compliance with affirmative action and nondiscrimination requirements.
- Conduct investigations and resolve complaints of discrimination and harassment in accordance with CSU procedures.
- Serve as a resource and provide assistance to units, departments, and CSU constituencies regarding matters related to equal opportunity, affirmative action, access, and nondiscrimination.
- Provide education and training to faculty, staff, and students on matters related to equal opportunity, discrimination, and harassment.
- Coordinate CSU compliance with the Americans with Disabilities Act, Section 504 of the Rehabilitation Act of 1973, and Title IX of the Education Amendments of 1972.
• Collaborate with the Vice President for Diversity to cultivate awareness, appreciation, and engagement with diversity and its relevance in a CSU environment.

Office of Vice President for Diversity
Office in 645 South Shields Street
Fort Collins, CO 80523-1060

The Office of the Vice President for Diversity strives to foster an inclusive campus that promotes and nurtures diversity, broadly defined. We are committed to a foundational principal of inclusive excellence recognizing that our institutional success depends on how well we welcome, value, and affirm all members of the CSU community.

Our efforts focus on addressing diversity and inclusion policies and practices that are essential to stay competitive and competent in the global market place and are necessary in the recruitment and retention of a diverse workforce. We recognize that all members of the campus community (administrators, faculty, staff, students, and alumni) must assume responsibility for the climate of CSU. A unit or person can drive the process, but every individual at CSU assumes responsibility for positive change.

Resources for Disabled Students
Office in General Services Building, Room 100, and Office in Lory Student Center, Room 223
(970) 491-6385

Resources for Disabled Students (RDS) provides support to students who have physical or learning disabilities as well as chronic physical or mental illnesses/conditions that may impact their ability and/or access to effectively participate as a student. Support includes advocacy as well as accommodation services to minimize the effects of a disability or condition.

Accommodation services include:
• Alternative testing conditions
• Alternative text conversion
• Note taking support
• Accessible transportation
• Sign language/oral interpreting.

Women and Gender Advocacy Center
Office in Student Services Building, Room 112, and Office in Lory Student Center, Room 234
(970) 491-6384

The Women and Gender Advocacy Center (http://wgac.colostate.edu) provides programs and resources focusing on all genders, social justice, and interpersonal violence prevention. Staff and volunteers also provide confidential advocacy and support for victims of sexual violence, stalking, sexual harassment, and relationship violence. Programs concentrate on examining the intersections of oppression and creating conditions that allow all people to equally access opportunities in a safe campus environment.

Student Resources and Campus Life
• Campus Activities
• Career Center

• Child Care Options
• CSU Health Network
• Housing & Dining Services
• International Student and Scholar Services
• Off-Campus Life
• Orientation and Transition Programs
• CSU Police Department
• Parking and Transportation Services
• Student Legal Services
• Student Resolution Center

Campus Activities
Office in Lory Student Center, Room 120
(970) 491-5707

The Career Center (http://career.colostate.edu) provides career exploration, planning, and job/internship search services for both graduate and undergraduate students in all majors and colleges.

Services include:
• Career counseling and career workshops
• Resume and job/internship correspondence writing skills
• On-campus recruiting program that includes two annual all-campus career fairs and several specialized fairs
• Career interviewing opportunities with over 100 employers via Handshake
• Available career and internship positions with area, regional, and national employers—information through Handshake

Child Care Options
See Adult Learner and Veterans Services (http://alvs.colostate.edu/childcare).

CSU Health Network

Good physical and mental health are important for every student’s academic success. The CSU Health Network (http://health.colostate.edu) is every student’s home for on-campus health care and resource for optimal health and well-being. By virtue of paying general fees, students are entitled to full access to the many services offered.

Medical Services

Hartshorn Health Center
(970) 491-7121 (After Hours 24/7 Nurse Helpline)

The CSU Health Network Medical Services (http://health.colostate.edu/services/medical-services) offers care and consultation for students’
medical concerns. In addition to scheduling appointments by telephone, students may schedule through the online health portal for some of the most common symptoms, conditions, and needs.

General Medical Services
- Medical Clinic
- Behavioral Health
- Immunizations Clinic
- Laboratory Services
- Pharmacy
- Radiology Services
- Triage Clinic

Specialty Services
- Allergy Clinic
- Dental Services
- Massage Therapy
- Men’s Clinic
- Nutrition Consultation
- Optometry Services
- Physical Therapy Services
- Psychiatry Services
- Radiology Services
- Sports Medicine/Orthopedic Clinic
- Travel Clinic
- Women’s Clinic

Counseling Services
Office in Aylesworth Hall NW, Room 123
(970) 491-6053
(970) 491-7111 (after hours Mental Health Crisis Intervention)

Whether students are experiencing a situational problem, an immediate crisis, or have a longstanding mental health concern, CSU Health Network Counseling Services (http://health.colostate.edu/services/counseling-services) are available to help. The professional staff includes licensed psychologists, licensed clinical social workers, and licensed professional counselors, as well as graduate student staff from each of these disciplines.

All counseling is confidential. No information is released to anyone without a student’s written consent except in the case of a life-threatening emergency or when it is otherwise required by law.

Services Offered:
- Individual and Couples Counseling
- Groups and Workshops
- Drugs, Alcohol and You (DAY) Programs
- Emergency Services
- Outpatient Counseling (iTEAM)
- Consultations with Colleagues/Parents/Friends

Health Education and Prevention Services
Office in 1302 S. Shields Street, Unit A2-1
(970) 491-1702 (http://health.colostate.edu/services/health-education-prevention-services)

Health Education and Prevention Services (http://health.colostate.edu/services/health-education-prevention-services) supports the health and well-being of students through the identification of campus health priorities and delivery of relevant programs, services and multidisciplinary initiatives that enable students to accomplish their academic goals and enhance personal development. Using evidence-based best practices, in collaboration with campus and community constituents, a holistic approach to health education and prevention is used for a diverse campus population. These practices involve opportunities to foster awareness and skills, as well as address the environmental context in which health behavior decisions are made.

Focus areas include:
- Alcohol and Other Drug Prevention
- Mental Health Initiatives
- Peer Education (CREWS)
- Resiliency and Well-Being Initiatives
- Sexual Health Initiatives
- Tobacco Cessation

Housing & Dining Services
Offices in the Palmer Center, 1005 W. Laurel
(970) 491-6511

Housing and Dining Services (http://housing.colostate.edu) provides all services and resources related to Residence Halls, Residential Dining Services, University Apartments, Conference & Event Services, and the CSU Mountain Campus.

Residence Halls
Office in the Palmer Center, Room 111
(970) 491-4719
Residence Life provides educational opportunities, services, programs, and facilities that are designed to enhance each student’s total campus experience. Students who live in the residence halls (http://www.housing.colostate.edu/residence-halls) have a choice of several different room and floor types. Students in the halls also have the option to join one of 20 Residential Learning Communities (RLCs) that are centered on students’ academic and personal interests. Students who live on campus have access to resources like professional staff as well as 24/7 security. Residence hall living allows students to actively participate in a variety of academic and social activities. These activities provide experiences in leadership development and co-curricular education that supplement classroom instruction and greatly enhance the quality of on-campus University life.

**Housing Assignments**
A Housing Guide is mailed to all newly admitted students as part of the admissions packet. Inquiries from continuing students should be directed to Residence Life at (970) 491-4719 or residencelife@colostate.edu.

**Residential Learning Communities**
Residential Learning Communities (RLCs - academic and themed floors in the residence halls) provide students with an opportunity to quickly develop a sense of community at CSU. Developed around academic majors and personal interests, these communities assist students in succeeding both academically and socially. Through a wide variety of programs, tutoring, and involvement opportunities, students in an RLC have the chance to get the most from their college experience. For more information on these communities, see Residential Learning Communities or Housing Options (http://housing.colostate.edu/housing-options).

**First Year Residence Hall Requirement - First-Year Students**
Experience and research have demonstrated that students who live on campus adjust to college life more successfully, have higher GPAs, and are more likely to graduate than students who live off campus. For this reason, all newly admitted first-year students and transfer students with fewer than 15 post-high school credits, who are single, under 21 years of age, and not living with their parents in the Fort Collins area, are required to live their first two consecutive semesters in a residence hall. Credits taken concurrent with high school and/or credits attained through Advanced Placement (AP) do not apply toward previous college experience.

All residents are required to sign a contractual agreement (http://reshallpolicies.colostate.edu/residence-hall-contract-guidelines), which includes meals, and is binding for the entire academic year. Inquiries regarding this requirement, including guidelines for requesting an exemption, should be directed to Residence Life at (970) 491-4719.

**Residential Dining Services**
Office in the Palmer Center, Room 108
(970) 491-4754

Residential Dining Services (http://housing.colostate.edu/dining) operates six dining centers, two Express locations, a Sports Grill, and RAMWich - an online sandwich ordering system with pick-up at Braiden Dining Center. "Late Night" dining options are available at four convenient locations. Each dining center features a unique combination of food concepts, offering choices such as sushi, pizza, pasta, stir-fry, vegan/vegetarian options, Tex-Mex, an array of international options, and made-to-order sandwiches. Extensive salad bars feature fresh fruits and vegetables as well as fat-free dressings. The on-campus bakery provides a wide range of artisan breads, desserts, and gluten-free and specialty items. Students have a choice of meal plans, with access to any dining center. Menus include vegetarian, vegan, gluten-free, and soy products at each meal. A registered dietitian is on staff, who can assist students with special dietary needs.

**University Apartment Housing**
Office in the Palmer Center, Room 208
(970) 491-4743

The University Apartments (http://housing.colostate.edu/apartments) offer more than 1,100 apartments in four communities. Apartment Life has options for couples and family housing, graduate student housing, undergraduate student housing, as well as post-doctoral and visiting scholar housing. Academic year or month-to-month leases are available. Individual leases in shared apartments are also offered. The Apartment Life website offers rental rates, 3D floor plans, and a video of each apartment village.

A Housing Guide is mailed to all newly admitted students as part of the CSU admissions packet. Inquiries from continuing students should be directed to Apartment Life at (970) 491-4743.

**International Student and Scholar Services (ISSS)**
Office in Laurel Hall
(970) 491-5917

International Student and Scholar Services (http://issss.colostate.edu/mission_statement), within the Office of International Programs, assists international students and scholars with cultural adjustment, academic integration, professional growth and personal support, and oversees orientation and arrival, regulatory compliance, immigration services, sponsor services and programming, and serves as a liaison to the U.S. government.

**Off-Campus Life**
Office in Lory Student Center, Room 274
(970) 491-2248/491-6196

Off-Campus Life (http://offcampuslife.colostate.edu) provides services and programs to meet the diverse needs of off-campus and commuter students and to assist students in successfully transitioning, integrating, and engaging in the local community.

Services include:
- Information on housing options in the community, including online rental listing service
- Help in finding roommates
- Transportation information
- Tenant rights and responsibilities, including ordinance information
- Connection with community members through volunteer opportunities
- Tools and resources for students to have a successful off-campus living experience.

**Orientation and Transition Programs**
Office in Aylesworth Hall NE, Room 202
(970) 491-6011
Orientation and Transition Programs (http://otp.colostate.edu) provides programming and services designed to assist first-year, second-year, and transfer students with a successful transition at CSU. OTP offers a continuum of services beginning with Ram Orientation to Ram Welcome (prior to classes beginning) to transition programming throughout the first two years of students’ experiences at CSU. OTP believes in assisting students in creating a sense of belonging at CSU and understanding what it means to be a CSU Ram. Additionally, OTP places high value on student leadership and development and employs more than 280 student leaders to implement these University-wide programs.

**CSU Police Department**

Office in Green Hall  
(970) 491-6425

The CSU Police Department (http://police.colostate.edu) (CSUPD) operates 24 hours a day, every day of the year. “911” access is TDD compatible and a TDD service line is available at (970) 491-2323.

The CSU Police Department is a full-service, accredited law enforcement agency whose officers are armed and have full law enforcement authority on all property owned or controlled by CSU. Officers are committed to a philosophy of community based policing and work in partnership with others to augment campus safety. CSU officers also possess peace officer commissions from the State of Colorado, the City of Fort Collins, and are commissioned deputy sheriffs in Larimer County.

CSU police enforce criminal and traffic laws, investigate all crimes that occur on campus, make arrests, and maintain full integration with the criminal justice system, including close working relationships with the District Attorney’s Office, Fort Collins Police, Larimer County Sheriff’s Department, and other state and federal law enforcement agencies and investigation bureaus. The programs and services of the department are designed to meet the demands and needs of a growing and thriving CSU community.

The Jeanne Clery Disclosure of Campus Security and campus Crime Statistics Act is the landmark federal law that requires colleges and universities to disclose information on security policies and timely, annual information about crime on and around campus. The CSU Safety Report (http://police.colostate.edu/clery-act) is published annually.

The Bicycle Education and Enforcement Program (http://police.colostate.edu/bike-traffic) (BEEP) is a unit of the police department designed to address bicycling issues on campus. Bicyclists are expected to comply with CSU bicycle regulations, obey all traffic laws, and register their bicycles with the CSUPD.

The Safe Walk Program (http://police.colostate.edu/safe-walk) is a service designed to assist those who walk during the hours of darkness. Trained Campus Service Officers are available to walk people to and from their destination within a defined service area. Call (970) 491-1155 or use any police service callbox on campus.

**Campus Safety and the Clery Act**

The Jeanne Clery Disclosure of Campus Security and Campus Crime Statistics Act (“Clery Act”) is the landmark federal law that requires colleges and universities to disclose information on security policies and timely, annual information about crime on and around campus. Additional information about the Clery Act, and campus safety is available in University Policies, and online (http://police.colostate.edu).

**Concerned about someone? Tell Someone**

If you are concerned about the health, well being, or safety of a CSU student or employee, you are encouraged to Tell Someone (http://supportandsafety.colostate.edu/tell-someone). Examples of when to Tell Someone include but are not limited to:

- Threats, gestures, writings, or attempts related to suicide or violence
- Harmful to themselves or others
- Self-injurious behavior (e.g. cutting self)
- Alcohol or other substance abuse problems
- Pattern of bizarre behaviors or actions
- Hospitalization for mental health issues or drug or alcohol use
- Sudden, rapid weight loss or gain
- Poor health due to restrictive eating or possible eating disorder
- Disruption to the living, learning, or working environment.

Tell Someone by calling (970) 491-1350 or filling out the online form (http://supportandsafety.colostate.edu/referral-form).

The Tell Someone system is designed to help the individual you are concerned about, not to punish them. All reports are treated with discretion and with a reasonable expectation of confidentiality. You may access additional information regarding CSU’s policy on Student Sexual Harassment and Sexual Violence (http://supportandsafety.colostate.edu/sexual-harassment).

**Parking and Transportation Services**

Office in Lake Street Garage, 1508 Center Avenue  
(970) 491-7041

Parking at CSU is available for faculty, staff, students, and visitors and does require a parking permit. Parking and Transportation Services (http://parking.colostate.edu) can assist with more information regarding purchasing an annual permit, information on visitor or short term permits, or pay by plate locations. In addition to commuting via automobile, many members of the campus community choose alternative transportation options. Visit the Parking and Transportation Services website for information on biking or walking to CSU, carpooling, and using the Transfort system.

**Alternative Transportation**

Brought to campus by ASCSU, Parking and Transportation Services, and Transfort (http://parking.colostate.edu/pages/Transfort.aspx), leave cars at home and use MAX, other Transfort (http://parking.colostate.edu/pages/Transfort.aspx) routes and Around the Horn (http://parking.colostate.edu/pages/Transfort.aspx) to get around campus. Thirteen stops are serviced every 10 minutes Monday through Saturday. In addition to mass transit, CSU encourages alternative transportation (http://pts.colostate.edu) (biking, walking, and carpooling).

**Student Legal Services**

Office in Lory Student Center, Room 284  
(970) 491-1482

Student Legal Services (http://sls.colostate.edu) provides free legal advice to fee-paying students on a variety of legal matters. Common cases involve housing issues (e.g., review of leases), criminal law, consumer complaints, and debt problems, but all questions are welcome. Some services such as preparation of wills and powers of attorney carry an additional nominal charge. The staff also educates clients about
their legal rights and responsibilities and, where helpful, guides students in the use of negotiation, mediation, and small claims court to resolve their disputes. Students who don't pay the student fee package may, in appropriate cases, pay SLS’s semester fee (less than $10) and receive services. Educational presentations by the SLS attorneys are always available.

**Student Resolution Center**
Office in Aggie Village Walnut, 501 W. Lake
(970) 491-7166; FAX (970) 491-1800

Student Resolution Center (SRC) (http://conflictresolution.colostate.edu) supports the developmental, behavioral, and educational needs of students. Through a myriad of approaches SRC strives to maximize individual student success while upholding community standards and helping students overcome mistakes. In an effort to resolve conflicts at the lowest level possible, SRC regularly provides assistance to students struggling with grade disputes, roommate disagreements, student/faculty conflicts, workplace issues, academic matters/appeals, conflicts within student organizations, or navigating university policies and procedures.

SRC offers the following services:
- Conflict coaching/consultation
- Assistance with grade appeals
- Mediation/facilitation between individuals or organizations
- Advising of student conduct boards
- Student conduct hearings
- Pre-admission hearings
- Training/outreach related to conflict prevention and management, academic integrity, and civility
- Outcomes/education, including referrals to the Drugs, Alcohol and You (DAY) Programs, Party Partners, and skill-building workshops.

**Academic Services and Programs**
- Center for Advising and Student Achievement (CASA)
- Learning Communities
- Office of International Programs
- The Institute for Learning and Teaching (TILT)

**Center for Advising and Student Achievement (CASA)**
The Center for Advising and Student Achievement (http://www.casa.colostate.edu) (CASA) is a dynamic organization that empowers students to make the most of their educational experience beginning at orientation and continuing through to graduation. CASA offers essential services integral to both the academic and personal success of students. Services include Orientation and Transition Programs, Key Communities, Undeclared Advising, Health Professions Advising, Community for Excellence Scholar Programs, and Outreach and Support Programs.

**Undeclared Advising**
Office in the TILT Building, Room 121
(970) 491-7095

**Health Professions Advising**
Office in the TILT Building, Room 121
(970) 491-7095

**Outreach and Support Programs**
Office in the TILT Building, Room 121
(970) 491-7095

**Community for Excellence Scholar Programs**
Office in the TILT Building, Room 121
(970) 491-7095

**Orientation and Transition Programs**
Office in Aylesworth NE, Room 202
(970) 491-6011

**Key Communities**
Offices in Aylesworth NE, Room 202
(970) 491-3658

More information can be found about each of these programs on the CASA website. If students need more information on any of these areas or have specific questions or comments, please feel welcome to call the main CASA office at (970) 491-7095.

**Learning Communities at CSU**
Colorado State University offers students a variety of residential and non-residential Learning Communities and Residential Theme Programs (http://www.lc.colostate.edu) that bring cohorts of students together in shared learning experiences. Learning Communities integrate curricular (co-enrollment in classes) and co-curricular learning in order to provide a supportive, academically-focused environment that cultivates a sense of community and empowers students to become engaged citizens on campus and in the community.

In partnership with Housing & Dining Services, Residential Learning Communities and Theme Communities are in many of the residence halls, offering a unique residential experience consisting of special interest areas that help build positive communities with students who share similar academic or personal interests and/or lifestyles. These communities connect students with faculty and staff who engage students in their learning and provide information about opportunities available at CSU.

Residential Learning Communities include:

**Arts and Creative Expression Residential Learning Community: (ACE)** The ACE (http://www.ace.colostate.edu) program in Parmelee Hall provides students in the visual and performing arts a collaborative environment in which to grow creatively. Students will learn to become strong advocates of the arts and will have opportunities to participate in service learning programs and outings such as gallery walks, museum visits, and live performances both on and off campus. The ACE Program is open to first year students majoring in Art, Music, Dance, and Theatre. Pre-music majors do not qualify.

**Engineering Residential Learning Community: The Engineering Learning Community (http://www.lc.colostate.edu) in Academic Village and Edwards Hall offers Engineering students an academically supportive and fun environment. Residents can take advantage of design studios,**
collaborative work rooms, and an electronic classroom. This community is limited to Engineering majors only.

**Equine Community:** The Equine Community (http://www.lc.colostate.edu), housed on residential floors of Ingersoll Hall, is a program for students interested in science and industry, animals, and other areas of interest offered by the College of Agricultural Sciences. Residents can take advantage of exams reviews, club meetings, and many other extracurricular activities: English Riding Club, Versatility Ranch Horse Club, Polo Team, Pre-Vet Club, and more.

**Global Village:** Global Village (http://www.lc.colostate.edu) is an engaged community bringing together international and domestic students in a supportive intercultural living and learning environment. This community aims to foster an understanding of global cultures and experiences where students share a passion for exploring the world and a desire to develop their leadership skills. As a Global Village student, you have the opportunity to enroll in 6 credits with other Global Village students including SPCM 100 and KEY 192C. Global Village Seminar. Global Village is open to first year and transfer students entering CSU.

**Health and Exercise Science Community:** (HES) The HES Community (http://www.hes.chhs.colostate.edu/students/undergraduate/housing.aspx), located in Corbett Hall, is the perfect place for students interested in majoring in Health and Exercise Science with concentrations in Health Promotion and Sports Medicine. This community is limited to HES majors only.

**Honors Residential Learning Community:** (HRLC) The HRLC, housed in the Academic Village and Edwards Residence Hall, is for students admitted to the University Honors Program. First year students develop a sense of community by residing with high achieving students who share similar academic interests and goals. Honors staff are located at the Academic Village and are available for advising and assistance.

**College of Natural Sciences Learning Community:** (CNSLC) The CNSLC (http://www.natsci.colostate.edu/future-students/cnslc) in Laurel Village provides a positive and diverse learning environment for science students and offers classrooms, faculty and advising offices, study groups, fabulous social spaces to promote interaction among the students, and a wide variety of social & academic activities and projects. Peer Academic Leaders (PALs), help students make connections to what they are learning in their courses through engaging projects and activities that connect science to their lives and the world.

In addition to participating in the CNSLC, there are two thematic clusters that offer additional, optional experiences for select students:

- **K-12 Outreach Cluster:** Students who are interested in K-12 outreach will all live together on one floor. They will take a one-credit seminar class that will explore issues of social justice and diversity in science and science education. Through the class, students will work with local, underserved, and culturally-diverse K-12 classes. This cluster will provide opportunities to connect with other students from diverse backgrounds and get involved with faculty and staff at CSU including: CSU diversity offices and programs, the Education and Outreach Center and other College of Natural Sciences outreach efforts.

- **Sustainability Cluster:** Students who are interested in sustainability will live together on one floor in Pilion Hall, a LEED-certified building that will provide a perfect platform for exploring sustainability on the CSU campus. Students will collaborate with Residence Life, Housing and Dining and the College of Natural Sciences to push the boundaries of sustainability in a residence hall and explore the ideas of global sustainability through the lens of a scientist. One example of a current student-driven project is piloting in-hall composting to inform potential practices on a larger scale. Members of this cluster will have the opportunity to get involved in research and to propose and spearhead other sustainability-related projects.

**Key Communities:** Key Communities (http://key.lc.colostate.edu) bring together dedicated students from diverse backgrounds to form a supportive community designed to foster student success. Students engage in learning, as well as enhance their leadership skills, while forming lifelong friendships. Peer Mentors, faculty and staff authentically care for and support students to achieve excellence. Key creates a supportive, family culture, and expects excellence within a shared residential and classroom experience.

- **Key Academic Community:** Key Academic Community is a first-year residential learning community of 152 students living together and co-enrolling in cluster courses. Students who participate in the Key Academic Community have the opportunity to build connections with faculty and staff, live with a close-knit group of students who share the values of the community, and develop leadership skills through campus and community programs.

- **Key Explore Community:** The Key Explore Community is focused on providing students who have not yet declared a major the opportunity to “create their own story” in order to understand how their interests, strengths, values, identities, and personal experiences have shaped who they are and who they would like to be. Additionally, students will have social, educational, and community oriented activities that help support where they are going with their major, career, and leadership paths. The community is comprised of 152 students who live together and enroll in one Key Seminar Course and one All University Core Curriculum class in small groups.

- **Key Health Professions Community:** The Key Health Professions Community is a first-year learning community of 76 students intentionally focused on the exploration of human and animal health professions fields and academic achievement. Key Health Profession students live together and enroll in 3-4 classes together. Students will participate in required academic study skills, personal enrichment, and health professions interest workshops to provide support for researching and making choices with their academic, career, and leadership paths.

- **Key Service Community:** The Key Service Community is a first-year residential learning community developed around the theme of “student leadership and civic engagement.” The Key Service Community comprises 76 students who live together and co-enroll in linked courses. In this community, students take advantage of year-long service opportunities while building connections with faculty and community organizations. Through discussion, service, and reflection, students develop a personal philosophy about their role in our world. Students also assess how they can contribute to a more civil society while becoming more active and positive role models within university life and beyond. A separate application form is required.

- **Key Culture, Communication, and Sport:** The Key Culture, Communication, and Sport Community in Parmelee Hall is for students who are dedicated to high standards for academic excellence combined with the support and resources needed for success, an appreciation for diversity, and involvement in campus activities. Together, 38 students will enroll in 2-3 classes together.
This community is comprised of first year students as well as first year NCAA student athletes.

- **Key Plus Community:** Key Plus is an academically focused living learning community at CSU working closely with students to develop strong leadership and career decision-making skills. Key Plus is an optional sophomore year program for students who participated in the Key Academic, Key Service, Key Explore, Key Health Professions, or Key Culture, Communication, and Sport Communities during their first year at CSU. Students in the Key Plus Community can apply to participate in one of two tracks: the Key Plus Learning Community or the Key Plus LEADS (Leaders Engaged in Academics, Diversity and Service) Community.

- **Key Plus Learning Community:** The Key Plus Learning Community is an honorary opportunity for a limited number of participants. Students must apply and be selected to participate in the program. There is an affiliated 1-credit class within the Learning Community and students have first option to live in the 4th floor Braiden Lofts. However students may also live off-campus and be involved in the Key Plus Learning Community by taking one of the affiliated 1-credit courses.

- **Key Plus "Leaders Engaging in Academics, Diversity, and Service" or LEADS Community:** The LEADS Community is also an honorary opportunity whereby participants do not enroll in the affiliated classes but do live in the 4th floor Braiden Lofts. Students in the LEADS Community are required to participate in 20 hours of leadership activities each semester. There are a limited number of spaces available in the LEADS Community and students must apply and be selected to participate in the program.

**Leadership Development Community: (LDC)** The LDC (http://www.slice.colostate.edu/LDC.aspx) is a Residential Learning Community comprised of a diverse group of students who live together on a floor in Durward Hall with students of all majors and minors who have a similar passion focused on leadership development and making a change in the world. Students in the LDC will participant in a class as part of the President’s Leadership Program (PLP), as well as in other enriching social, academic, and cultural activities as part of the residence hall community.

**Natural Resources and Sustainability Learning Community: (NRSRC)** The NRSRC (http://www.hdfs.colostate.edu/students/current/resources-and-information/579-live-green), located in Summit Hall, is only for Natural Resources students to engage in the research and outreach of the Warner College of Natural Resources. Through this experience, NRSRC students will have the opportunity to network with natural resources faculty, community members and dive into their field of study. There are two distinct tracks to choose from: Natural Resources and Sustainability or Outdoor Leadership.

**Residential Theme Communities include:**

- **Living Substance Free:** This is a community for students who are committed to a lifestyle free from alcohol, tobacco, or drugs. A wide variety of social events and programs are offered to first year and returning students. This program is co-sponsored by Residence Life and the CSU Health Network.

- **Second-Year Experience Community:** The Year 2@CSU: Residential Experience (http://www.otp.colostate.edu/sy-year2.aspx) is a co-sponsored community between Residence Life (http://www.housing.colostate.edu/residence-halls) and Orientation and Transition Programs (http://www.otp.colostate.edu) (OTP) housed in newly constructed Laurel Village. Forty suite-style rooms have been designated for students to live in a community that is focused on the second year experience. Specifically, the community focuses on outreach and learning connected to the following areas: career and major exploration, global citizenship and service, academic engagement and outdoor adventure. Students living on the floor connect with each other through academic workshops, a fall outdoor mountain retreat, service projects, and a variety of other floor outings. This themed community will ask residents to sign a learning agreement and no class is required to participate in this community. Any current first year student is welcome to apply to live in this community.

- **Transfer Residential Community:** The Transfer Residential Community (http://www.otp.colostate.edu/csu-transfer-communities.aspx) in Braiden, Allison, and Summit Halls is a partnership between Orientation and Transition Programs and Residence Life. The Community consists of transfer students with an interest in learning more about the resources at CSU and making connections with other transfer students. The Transfer Residential Community is about supporting student success at CSU and encouraging active engagement while introducing students to the many opportunities available to them through CSU. In addition, the Transfer Residential Community provides resources and direct contact with Transfer Transition Leaders, connecting students to CSU and the community, while fostering meaningful friendships. Finally, by living and participating in the Transfer Residential Community, students get the help and guidance they need to thrive in their transition and excel in their academic and social experience at CSU. This community is open to new transfer students.

**Learning Communities without a residential requirement include:**

- **Campus Connections Learning Community:** The Campus Connections Learning Community (http://www.hdfs.chhs.colostate.edu/students/undergraduate/campusconnections/community.aspx) (CCLC) provides ongoing opportunities for CSU students to stay involved with Campus Connections throughout their CSU career.

- **Community Engagement Leaders (CELS):** CELS is an interdisciplinary, non-residential learning community designed to provide undergraduate students with the opportunity to participate in experiential service-learning through community leadership. Specifically, CELS is designed to support 2nd and 3rd year students interested in linking their passion for positive change and community engagement with advanced academic work in their major of study. CELS is open to any current CSU 2nd year and 3rd year undergraduate student in good academic standing with CSU who is passionate about fostering positive, sustainable change in their community.

- **Dream Project:** Dream Project is a student-initiated high school outreach program that partners CSU students with first-generation and low-income students in Fort Collins area high schools to assist in the college admissions process (including FAFSA prep, applications, writing essays, applying for financial aid, and finding scholarships). The CSU Dream Project is open for all students (First-year, second-year, juniors, seniors, and transfer students).

- **Mentored Research and Artistry Program:** The Mentored Research and Artistry Program is an interdisciplinary, non-residential learning community designed to provide undergraduate students with the opportunity to participate in high impact, real world research or other creative works.
The Office of International Programs (http://international.colostate.edu) (OIP) creates and fosters international activities supporting teaching, learning, research, and engagement at CSU. OIP offers a broad array of programs and services designed to provide international experiences for all CSU students, scholars, faculty and staff. The office is organized into four functional units—International Student and Scholar Services, Education Abroad, International Initiatives and China Programs.

The Institute for Learning and Teaching (TILT)

Offices in the TILT Building
(970) 491-3132

The Institute for Learning and Teaching (http://tilt.colostate.edu) (TILT) supports students’ academic success and co-curricular engagement through several learning programs. Tutoring and study groups help students succeed in challenging courses, while academic success workshops and extracurricular short courses, such as GRE preparation, time management and learning strategies, help students improve study skills and learn about topics of interest. Through TILT, students can participate in service learning opportunities or in undergraduate research and artistry projects with faculty mentoring.

INTO-CSU

Through INTO CSU International students can study English as a Second Language for personal, professional, or academic purposes. INTO CSU also offers several undergraduate and graduate Pathways bridge programs to strengthen academic credentials and English proficiency before applying to a CSU degree program. All programs are in a highly supportive learning environment, designed to accelerate students’ success. Students, regardless of INTO CSU program of study, have all the benefits and experiences of campus life at CSU, including access to all of the academic, social, and cultural resources and activities that CSU has to offer.

English Language Programs

Students can study General English for personal and professional use, either in a single or series of 4-week long sessions, or in a campus year abroad setting. The Academic English program is designed for students who are intending to get a degree at an American university.

Academic English Program

The Academic English (http://www.intohigher.com/us/en-us/the-universities/into-colorado-state-university/studying/into-csu-programs/programs/academic-english.aspx) program consists of 4-week sessions designed for students of all levels of English who want to develop communication skills in many social and professional situations while learning about American culture.

Pre-Academic English Program

The four-week Pre-Academic English (http://www.intohigher.com/us/en-us/the-universities/into-colorado-state-university/studying/into-csu-programs/programs/pre-academic-english.aspx) program is specifically designed for Fulbright scholars and students who have been admitted to a Pathway program or directly admitted to a CSU degree program for the Fall semester. This program allows students to strengthen their English language skills and become oriented to US academic culture and expectations prior to starting their Pathway or degree program.

General English Program

The General English (http://www.intohigher.com/us/en-us/the-universities/into-colorado-state-university/studying/into-csu-programs/programs/general-english.aspx) program consists of 4-week sessions designed for students of all levels of English who want to develop communication skills in many social and professional situations while learning about American culture.

General English students have access to all the same resources and amenities as all other university students. General English students who choose shared on-campus housing will live in the building with Americans, further enhancing their study abroad experience in America. With American conversation groups and social programs organized by INTO CSU, students are more likely to have a successful experience integrating to the campus community and American lifestyle.

Pathway Programs

INTO CSU offers undergraduate and graduate level bridge programs designed to provide international students experience in CSU university-level academic classes before they become full-time university students. Students in a pathway program have access to many of the services of a regularly admitted student along with additional support to help with their transition to American culture and study.

Undergraduate Pathways

Undergraduate pathways (http://www.intohigher.com/us/en-us/the-universities/into-colorado-state-university/studying/undergraduate-pathways.aspx) include coursework in English Language, math, and major specific classes, or classes to help fulfill CSU core or elective credits.

Graduate Pathways

Graduate pathways (http://www.intohigher.com/us/en-us/the-universities/into-colorado-state-university/studying/graduate-pathways.aspx) include coursework in English Language, undergraduate, and/or graduate academic courses designed to ensure success in specific CSU graduate programs.

Administrative Resources

- Academic Computing and Network Services (ACNS)
- Registrar’s Office
- Student Financial Services
• University RamCard

**Academic Computing and Network Services (ACNS)**
Office in University Services Center, Sixth Floor
(970) 491-5133

Academic Computing and Network Services (http://www.acns.colostate.edu) (ACNS) provides information technology services to the CSU community in addition to those local resources available in colleges and departments.

Account information, documentation, and assistance with personal computers and CSU's central computing systems are available from the Central IT Help Desk, located in Morgan Library (970) 491-7276. Computers, software, and technology supplies may be purchased at RAMtech, located in the Lory Student Center (970) 491-7625. A current CSU identification card is required for purchases.

**Registrar's Office**
Office in Centennial Hall
(970) 491-4860

The Registrar's Office supports students throughout their academic careers and beyond by providing innovative services to the CSU community. The Registrar's Office serves as a central administrative office for students, families, faculty, staff, and alumni by providing the following services:

• Maintain and provide official academic transcripts
• Collect and serve as resource for academic appeals for exceptions
• Oversee and support all academic registration functions
• Report, certify, and maintain academic degree and enrollment verifications
• Support transfer students and manage the transfer credit process
• Certify military and veterans educational benefits
• Coordinate academic and classroom scheduling
• Act as a central academic information resource
• Comply with and educate campus on Federal and State legislation and institutional policy
• Publish final examination schedules
• Lead and participate in cross-divisional and institution-wide projects
• Manage on-line course grading and reporting
• Support curriculum approval process
• Publish annual General Catalog
• Maintain RAMweb (https://ramweb.colostate.edu), ARIES, and ARIESweb access and security
• Serve on and support numerous university committees as well as national level organizations.

**Office of Financial Aid**
Office in Centennial Hall
(970) 491-6321

The Office of Financial Aid (http://sfs.colostate.edu) administers a variety of institutional, state, federal, and private financial assistance programs for qualified students. Financial assistance programs include scholarships, grants, loans, and employment.

**Student Employment Services**
Office in Centennial Hall
(970) 491-5714

Employment opportunities available include the Work-Study Program, on-campus departmental positions, and community part-time employment. Refer to the Student Employment Services (http://ses.colostate.edu) website for more details.

**University RamCard**
Office in Lory Student Center, Room 271
(970) 491-2344

RamCards (http://housing.colostate.edu/ramcard) (CSU identification cards) for students, faculty, and staff are used by campus departments for a wide range of activities including identification, meal plans, RamCash accounts, building access, library materials checkout, Transfort, Around the Horn, print and copy, sporting and cultural events, and entrance to exams. The RamCard (http://housing.colostate.edu/ramcard) can be obtained during normal business hours at the RamCard Office in the Lory Student Center, Room 271. A current government-issued picture ID such as a driver’s license, passport, or military ID is required to obtain a RamCard. The initial card cost is $20 and replacement cards cost $25 (subject to change).

**Facilities**

• CSU spans five primary campuses on 4773 acres, plus numerous Agricultural Experiment Stations, Cooperative Extension offices, and Colorado State Forest Service sites across the state that cover an additional 4038 acres. Altogether, CSU has 705 buildings including 3295 classrooms and 1237 laboratories totaling 10,434,578 gross square feet. In addition to acres owned, CSU manages an additional 9,978,478 acres throughout the state, most of which is the Colorado State Forest.

• Bookstore
• Coffee Shops
• CSU Transit Center
• Lory Student Center
• CSU Mountain Campus
• CSU Sports and Athletic Facilities
• Student Recreation Center
• Study Spaces
• University Center for the Arts
• University Libraries
• Veterinary Teaching Hospital

**Bookstore**
The CSU Bookstore (http://www.bookstore.colostate.edu/home.aspx) is located in the Lory Student Center. Proceeds from the CSU Bookstore go back to students and the CSU community. CSU insignia items, school supplies, and art supplies are available as well as textbooks for every class at CSU.
Coffee Shops
Coffee shops are great places to grab a refresher and dive into studying or group meetings. Here are the locations of some coffee shops on CSU's campus.

Sweet Sinsations (http://www.sc.colostate.edu/sweets.aspx) - Lory Student Center
Sweet Temptations (http://www.sc.colostate.edu/sweet-temptations.aspx) - Behavioral Sciences Building
Morgan’s Grind Café (http://lib.colostate.edu/about/maps/first/morgans-grind-cafe) - Morgan Library
The Bean Counter (http://www.sc.colostate.edu/the-bean-counter.aspx) - Rockwell Hall
Ram’s Horn Express (http://housing.colostate.edu/locations-hours) - Academic Village

CSU Transit Center
The CSU Transit Center (http://www.sc.colostate.edu/transit-center.aspx) is located on the first floor of the north end of the Lory Student Center. It includes a Transfort customer counter, flat screen monitors displaying departure times and news stories, and an indoor passenger waiting area to make public transportation more comfortable and convenient for CSU students and visitors.

Transfort, Around the Horn
Transfort (http://www.ridetransfort.com) is the local Fort Collins bus service that offers a multitude of stops close to student living areas and runs schedules that complement CSU class schedules. This mass transportation system cuts down on pollution and brings students right to the center of campus. CSU students account for nearly thirty-five percent of Transfort’s ridership!

The Around the Horn (http://www.colostate.edu/AroundtheHorn) free shuttle service was added in 2014. Brought to the campus community by ASCSU and Transfort, the thirteen stops, serviced every ten minutes Monday through Saturday, offer a convenient and quick way to navigate campus.

Campus community members can leave cars at home and use MAX (the city’s rapid bus transit service), other Transfort routes, and the Horn to conveniently get to, and around campus.

Lory Student Center
The Lory Student Center (http://www.sc.colostate.edu) is the dynamic hub of campus, serving more than 20,000 people each day. It encourages the lifelong learning development of students, faculty, staff, and community members. Lory Student Center services and programs create a stimulating and supportive atmosphere to complement academic learning and social enrichment. You may reach Campus Information and Box Office at (970) 491-6444.

CSU Mountain Campus
Nestled in a beautiful, secluded mountain valley at an elevation of 9,000 feet, CSU’s Mountain Campus (http://www.mountainctrue.colostate.edu) provides field research and education, conference facilities, a challenge course, and world-class hiking. The Mountain Campus is located 50 miles west of Fort Collins and is adjacent to Rocky Mountain National Park, the Comanche Peak Wilderness Area, and Roosevelt National Forest. The campus is open from mid-May to mid-October and is available for field studies and research, conferences, workshops, meetings, and retreats.

CSU Sports and Athletic Facilities
Glenn Morris Field House
The Rams’ indoor track and field training facility is the venerable Glenn Morris Field House (http://www.csurams.com/facilities/south-college-fieldhouse.html), near the Jack Christiansen Track. This historic venue, built in 1924, underwent a renovation in 1998.

The venue contains three main wings: the south area, which includes the indoor track; the middle area, which houses offices and locker rooms; and the north area, which is where the basketball team formerly played and now is used for indoor court sports.

Hughes Stadium
Sonny Lubick Field at Hughes Stadium (http://www.csurams.com/facilities/hughes-stadium.html) lies at the base of the foothills of the Rocky Mountains, about two miles west of the main campus area and in one of the most scenic settings to be found anywhere. In 2000, permanent lighting standards were installed. Four years later, 4,400 additional seats were constructed in the north end zone, while the stadium’s press box and Rams Horn levels were renovated, and 12 new luxury boxes were constructed. Finally, the installation of a FieldTurf playing surface prior to the 2006 season completed renovations. Current capacity of the facility is 32,500.

Indoor Practice Facility
The Indoor Practice Facility (http://www.csurams.com/facilities/IPF.html) is designed for use by multiple sports programs at the University.

Features:
• Gymnasium easily encloses a regulation basketball court and two half courts
• Volleyball configuration can accommodate two full-length courts
• Contains a synthetic-turf football field (including one end zone)
• Features a four-lane, 70-meter track and a unique shoe-changing room adjacent to the football field
• Has flexibility to allow the softball team to set up batting cages on the football field
• Will provide shelter for any student-athlete in each of the Rams’ 16 varsity sports
• Includes training room, equipment storage, lobby and trophy display case, and restrooms
• Uses an innovative air circulation system.

Jack Christiansen Track
One of the finest track and field facilities in the region in a picturesque setting lends itself comfortably to annually hosting marquee events, including the 2011 and 2005 Mountain West Track & Field Championships. Such is the history surrounding the Jack Christiansen Memorial Track (http://www.csurams.com/facilities/christiansen-track.html) on the east side of CSU's main campus.

Regarded as one of the region’s finest facilities since it opened in 1989, the venue has provided a backdrop for success for the Rams. As a result, the program has the ability to attract some of the region’s finest athletes.
Moby Arena
Moby Arena (http://www.csurams.com/facilities/moby-arena.html) is a cozy and intimate playing facility nestled in the heart of the university’s central campus area.

With a capacity of 8,745, the whale-shaped venue features the pride and tradition of the Rams’ program that dates back 100 years, and a newness associated with a recent renovation to the arena’s concourses, athletic training facilities and locker rooms.

Ram Field
CSU’s softball facility, Ram Field (http://www.csurams.com/facilities/ram-field.html), has been the home of the school’s varsity softball program since its opening in 1995. The diamond is a state-of-the-art, NCAA-regulation field, just south of Moby Arena, complete with a high-quality sound system. The foul lines are 200 feet from home plate, and the center-field fence is 225 feet away.

University Tennis Courts
The University Tennis Courts are one of the finest tennis facilities in the nation. The $2 million dollar facility that opened in 2010-2011 features 12 post-tensioned concrete courts, eight of which are lighted for night play. For information about use of the Tennis Complex, visit Campus Recreation (http://csurec.colostate.edu/facility/our-facilities).

Student Recreation Center
Campus Recreation (http://csurec.colostate.edu) actively promotes the pursuit of a balanced, healthy lifestyle to a diverse university community by providing quality programs, facilities, and services that encourage personal growth, leadership development, and employment opportunities. Students paying full student fees for the current term are automatically eligible for Campus Recreation programs and services including use of the Student Recreation Center. Memberships are available to part-time students, employees, and spouses/partners. Inquire at the Service Center in the Student Recreation Center lobby for more information. To learn more about Campus Recreation at CSU, pick up a copy of the Campus Recreation Guide or check out Campus Recreation’s (http://csurec.colostate.edu) website.

Study Spaces
In addition to spaces in residence halls, among the shelves in Morgan Library (http://lib.colostate.edu) and throughout the floors of the Lory Student Center, CSU offers a variety of other study spaces. Some study spaces are reservable through the library reservation system (http://lib.colostate.edu/about/maps/presentation-rooms).

Some popular options include:
- Behavioral Sciences Building
- TILT Building - Russell George Great Hall
- Morgan Library - Group Study Rooms and The Cube
- The Durrell Center
- Clark Building - A-wing study lounge
- Scott Bioengineering Building
- The Microbiology Study Lounge
- Rockwell Hall West.

University Center for the Arts
Located at 1400 Remington Street, the University Center for the Arts (http://uca.colostate.edu) is an exquisite venue for music, theatre, dance and art where future generations of arts professionals — be it in performance, creative production and design, education, therapy, or research — are becoming contributors to the essential vitality of our culture and society and advance knowledge in the arts through discovery, dissemination, teaching, and preservation. Located in the old Fort Collins High School, the state-of-the-art UCA houses music, theatre, and dance performance venues, museums and galleries, rehearsal spaces, classrooms, and more.

Fort Collins offers an exceptional environment for students in the arts through a community that is closely connected to activities at the UCA. Fort Collins has a thriving cultural and artistic community and is consistently ranked as one of the best or the best place to live in the country. Its culture and its inviting Old Town architecture are complemented by its prime location immediately at the foot of the Rocky Mountains with breathtaking scenery and an almost infinite opportunities for first-rate outdoor activities.

University Libraries
William E. Morgan Library (http://lib.colostate.edu), located in the center of the main campus, offers nearly 300,000 square feet of research and learning space and houses a large part of the paper collection, which includes books, maps, journals, technical reports, archives, and manuscripts.

The University Libraries connects CSU to information and knowledge critical for research and learning. With a diverse collection of more than 2 million items and a broad range of research services, the Libraries provides faculty and students with opportunities to develop projects and ideas. These services include library instruction, research assistance, archives, electronic reserves, desktop resource delivery, and interlibrary loan.

The University Libraries is a member of the Association of Research Libraries (ARL), Greater Western Library Alliance (GWLA), and the Colorado Alliance of Research Libraries. These memberships enable the Libraries to participate in preservation, resources sharing, and collection development programs on a national scale. Resource sharing is further enhanced by the Libraries’ locally developed RAPIDILL system now linking the collections of more than 90 research libraries around the world.

Veterinary Teaching Hospital
CSU’s south campus contains the Veterinary Teaching Hospital (http://csuvets.colostate.edu) including the research and teaching programs and the federal Natural Resources Research Center.
ALL-UNIVERSITY CORE CURRICULUM

Office of Vice Provost for Undergraduate Affairs
Administration Building, Room 108
provost.colostate.edu/academic-programs (http://provost.colostate.edu/academic-programs)

- All-University Core Curriculum (AUCC)
- Early Completion of Mathematics/Composition Requirement
- English Composition Requirement
- Mathematics Requirement

All-University Core Curriculum (AUCC)

Office of Vice Provost for Undergraduate Affairs
Administration Building, Room 108
provost.colostate.edu/academic-programs (http://provost.colostate.edu/academic-programs)

- Note Regarding the All-University Core Curriculum
  - Category 1: Basic Competencies
  - Category 2: Advanced Writing
  - Category 3: Foundations and Perspectives

Note Regarding the All-University Core Curriculum

Credits earned in the College Board Advanced Placement Program (AP), the College-Level Examination Program (CLEP), and International Baccalaureate (IB) can be used to satisfy particular All-University Core Curriculum requirements.

All CSU undergraduate students share a learning experience in common. Faculty members from across the University contribute to that experience.

The composition and mathematics requirements must be completed within the first 60 credits (CSU and transfer) taken.

Each baccalaureate Program of Study must incorporate the following elements:

1. Basic Competencies
   A. Intermediate Writing 3
   B. Mathematics 3

2. Advanced Writing
   Advanced Writing 3

3. Foundations and Perspectives
   A. Biological and Physical Sciences (At least one course will include an associated lab) 7
   B. Arts and Humanities 6
   C. Social and Behavioral Sciences 3
   D. Historical Perspectives 3
   E. Global and Cultural Awareness 3

4. Depth and Integration
   Minimum 5 credits, 2 courses 5
   A. Each major must designate courses that build upon the Core Competencies of writing, speaking, and problem solving in an integrative and complementary way.
   B. Each major must designate courses that build upon the foundations of knowledge and intellectual perspectives of Core Category 3 in an integrative and complementary way.
   C. Every major must require a capstone experience at the senior level that consists of a designated course or sequence of courses that offer the opportunity for integration and reflection on students’ nearly completed baccalaureate education.

Students are advised to see if their preferred program of study has particular recommendations for satisfying All-University Core Curriculum requirements.

A student must earn a cumulative grade point average of 2.000 or better in the courses used to satisfy categories 1 through 3 of the All-University Core Curriculum requirements.

What follows is a brief description of each category in the All-University Core Curriculum and a list of the courses currently approved to meet that category. Note: No courses are listed in more than one category; courses listed in one category cannot be used to fulfill any other category in the AUCC.

Category 1. Basic Competencies
A. Intermediate Writing (3 credits)
The ability to write correctly and effectively is necessary for success in any academic program and enhances the possibility of one’s success in personal and professional life. The objective of courses in this category is to provide instruction in the skills essential to effective written communication, extensive practice in the use of those skills, and evaluation of students’ writing aimed to guide them in improving their skills.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>3</td>
</tr>
<tr>
<td>HONR 193</td>
<td>Honors Seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

B. Mathematics (3 credits)
The objective of the Mathematics requirement is to ensure that students develop mathematical skill and understanding essential for describing events, experiences, and the knowledge base of other disciplines.
Mathematics encourages a mode of thought that encompasses abstraction and generalization and permits careful analysis as well as explicit calculation.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101</td>
<td>Math in the Social Sciences (GT-MA1)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 105</td>
<td>Patterns of Phenomena (GT-MA1)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 126</td>
<td>Analytic Trigonometry (GT-MA1)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>4</td>
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<td>MATH 157</td>
<td>One Year Calculus IA (GT-MA1)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 255</td>
<td>Calculus for Biological Scientists II (GT-MA1)</td>
<td>4</td>
</tr>
</tbody>
</table>

**Category 2. Advanced Writing (3 credits)**

Building on and adapting basic skills and strategies already developed in the course in Intermediate Writing, the objective of this requirement is enhancement of skills in written communication to extend rhetorical knowledge, to extend experience in writing processes, to extend mastery of writing convention, and to demonstrate comprehension of content knowledge at the advanced level through effective communication strategies.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 301</td>
<td>Advanced Scientific Writing–Chemistry (GT-CO3)</td>
<td>3</td>
</tr>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>3</td>
</tr>
<tr>
<td>CO 301A</td>
<td>Writing the Disciplines: Arts and Humanities (GT-CO3)</td>
<td>3</td>
</tr>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>3</td>
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<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
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</tr>
<tr>
<td>CO 302</td>
<td>Writing in Digital Environments (GT-CO3)</td>
<td>3</td>
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<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td>3</td>
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<tr>
<td>JTC 301</td>
<td>Corporate and Professional Communication (GT-CO3)</td>
<td>3</td>
</tr>
<tr>
<td>LB 300</td>
<td>Specialized Professional Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

**Category 3. Foundations and Perspectives**

The Core rests on acquiring foundations of knowledge and understanding intellectual perspectives. Courses in this category of the Core are designed to bring the skills developed in Core Competencies to life and give them direction and purpose. Elements of *foundation* offer exemplary introductions to fields and areas of study that explore their distinctive characteristics as well as critical links within and among them. Elements of *perspective* promote coherence and integration of knowledge within and among fields and areas of study, often through the exploration of significant thematic issues. *Foundation* elements frequently will be introduced in disciplinary contexts. *Perspective* elements typically will be structured comparatively and enlivened through interdisciplinary contexts.

**A. Biological and Physical Sciences (7 credits)**

The objective of the Biological and Physical Sciences requirement is to instill a clear understanding of the basic scientific viewpoint, to master scientific knowledge at a level that facilitates communication in an increasingly technological society, to employ and build on core competencies in mathematics and logical/critical thinking, to enable students to learn and use the scientific method, and to evaluate the impacts of science and technology on society. At least one course must have a laboratory component. Sometimes the laboratory component is a separate course number.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AA 100</td>
<td>Introduction to Astronomy (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>AA 101</td>
<td>Astronomy Laboratory (GT-SC1)</td>
<td>1</td>
</tr>
<tr>
<td>ANTH 120</td>
<td>Human Origins and Variation (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 121</td>
<td>Human Origins and Variation Laboratory (GT-SC1)</td>
<td>1</td>
</tr>
<tr>
<td>BZM 102</td>
<td>Insects, Science, and Society (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>BZ 104</td>
<td>Basic Concepts of Plant Life (GT-SC2)</td>
<td>3</td>
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<tr>
<td>BZ 105</td>
<td>Basic Concepts of Plant Life Laboratory (GT-SC1)</td>
<td>1</td>
</tr>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
<td>1</td>
</tr>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>4</td>
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<tr>
<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
<td>3</td>
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<tr>
<td>CHEM 104</td>
<td>Chemistry in Context Laboratory (GT-SC1)</td>
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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>4</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>1</td>
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<tr>
<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
<td>3</td>
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<tr>
<td>GEOL 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 121</td>
<td>Introductory Geology Laboratory (GT-SC1)</td>
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<tr>
<td>GEOL 122</td>
<td>The Blue Planet: Geology of Our Environment (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 124</td>
<td>Geology of Natural Resources (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>GR 304</td>
<td>Sustainable Watersheds</td>
<td>3</td>
</tr>
<tr>
<td>HORT 100</td>
<td>Horticultural Science</td>
<td>4</td>
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<tr>
<td>LAND 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>4</td>
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<tr>
<td>LIFE 201A</td>
<td>Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2)</td>
<td>3</td>
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<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
<td>3</td>
</tr>
</tbody>
</table>
### B. Arts and Humanities (6 credits)

The Arts and Humanities explore expressions that are uniquely human. The objective of the Arts and Humanities requirement is to investigate the cultural character and literatures of human experiences, fundamental questions of value and meaning, and, both in word and beyond words, the symbols and creative expressions of human life. No more than three credits of intermediate foreign language (L** 200, L** 201) may be used toward this category.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 100</td>
<td>Introduction to the Visual Arts (GT-AH1)</td>
<td>3</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
<td>3</td>
</tr>
<tr>
<td>D 110</td>
<td>Understanding Dance (GT-AH1)</td>
<td>3</td>
</tr>
<tr>
<td>E 140</td>
<td>The Study of Literature (GT-AH2)</td>
<td>3</td>
</tr>
<tr>
<td>E 232</td>
<td>Introduction to Humanities (GT-AH2)</td>
<td>3</td>
</tr>
<tr>
<td>E 242</td>
<td>Reading Shakespeare (GT-AH2)</td>
<td>3</td>
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<tr>
<td>E 270</td>
<td>Introduction to American Literature (GT-AH2)</td>
<td>3</td>
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<tr>
<td>E 276</td>
<td>Survey of British Literature I (GT-AH2)</td>
<td>3</td>
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<tr>
<td>E 277</td>
<td>Survey of British Literature II (GT-AH2)</td>
<td>3</td>
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<tr>
<td>ETST 240</td>
<td>Native American Cultural Experience (GT-AH2)</td>
<td>3</td>
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<tr>
<td>HONR 292</td>
<td>Honors Seminar—Knowing in Arts and Humanities (GT-AH2)</td>
<td>3</td>
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<tr>
<td>HONR 392</td>
<td>Honors Seminar</td>
<td>3</td>
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<tr>
<td>LARA 200</td>
<td>Second-Year Arabic I (GT-AH4)</td>
<td>4</td>
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<tr>
<td>LARA 201</td>
<td>Second-Year Arabic II (GT-AH4)</td>
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<tr>
<td>LARA 250</td>
<td>Arabic Language, Literature, Culture in Translation (GT-AH2)</td>
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<tr>
<td>LCHI 200</td>
<td>Second-Year Chinese I (GT-AH4)</td>
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<tr>
<td>LCHI 201</td>
<td>Second-Year Chinese II (GT-AH4)</td>
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<tr>
<td>LCHI 250</td>
<td>Chinese Language, Literature, Culture in Translation (GT-AH2)</td>
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<tr>
<td>LFRE 200</td>
<td>Second-Year French I (GT-AH4)</td>
<td>3</td>
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<tr>
<td>LFRE 201</td>
<td>Second-Year French II (GT-AH4)</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LFRE 250</td>
<td>French Language, Literature, Culture in Translation (GT-AH2)</td>
<td>3</td>
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<tr>
<td>LGER 200</td>
<td>Second-Year German I (GT-AH4)</td>
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<tr>
<td>LGER 201</td>
<td>Second-Year German II (GT-AH4)</td>
<td>3</td>
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<tr>
<td>LGER 250</td>
<td>German Language, Literature, Culture in Translation (GT-AH2)</td>
<td>3</td>
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<tr>
<td>LITA 200</td>
<td>Second-Year Italian I (GT-AH4)</td>
<td>3</td>
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<tr>
<td>LITA 201</td>
<td>Second-Year Italian II (GT-AH4)</td>
<td>3</td>
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<tr>
<td>LJPN 200</td>
<td>Second-Year Japanese I (GT-AH4)</td>
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<tr>
<td>LJPN 201</td>
<td>Second-Year Japanese II (GT-AH4)</td>
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<td>LJPN 250</td>
<td>Japanese Language, Literature, Culture in Translation (GT-AH2)</td>
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<tr>
<td>LRUS 200</td>
<td>Second-Year Russian I (GT-AH4)</td>
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<tr>
<td>LRUS 201</td>
<td>Second-Year Russian II (GT-AH4)</td>
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<tr>
<td>LRUS 250</td>
<td>Russian Language, Literature, Culture in Translation (GT-AH2)</td>
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<tr>
<td>LSGN 200</td>
<td>Second-Year American Sign Language I</td>
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<tr>
<td>LSGN 201</td>
<td>Second-Year American Sign Language II</td>
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<tr>
<td>LSPA 200</td>
<td>Second-Year Spanish I (GT-AH4)</td>
<td>3</td>
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<tr>
<td>LSPA 201</td>
<td>Second-Year Spanish II (GT-AH4)</td>
<td>3</td>
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<tr>
<td>LSPA 230</td>
<td>Spanish for Heritage Speakers</td>
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<tr>
<td>LSPA 250</td>
<td>Spanish Language, Literature, Culture in Translation (GT-AH2)</td>
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<td>MU 100</td>
<td>Music Appreciation (GT-AH1)</td>
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<tr>
<td>MU 111</td>
<td>Music Theory Fundamentals (GT-AH1)</td>
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<tr>
<td>MU 131</td>
<td>Introduction to Music History and Literature (GT-AH1)</td>
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<tr>
<td>PHIL 100</td>
<td>Appreciation of Philosophy (GT-AH3)</td>
<td>3</td>
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<tr>
<td>PHIL 103</td>
<td>Moral and Social Problems (GT-AH3)</td>
<td>3</td>
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<tr>
<td>PHIL 110</td>
<td>Logic and Critical Thinking (GT-AH3)</td>
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<tr>
<td>PHIL 120</td>
<td>History and Philosophy of Scientific Thought (GT-AH3)</td>
<td>3</td>
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<tr>
<td>SPCM 100</td>
<td>Communication and Popular Culture (GT-AH1)</td>
<td>3</td>
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<tr>
<td>SPCM 201</td>
<td>Rhetoric in Western Thought (GT-AH1)</td>
<td>3</td>
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<tr>
<td>TH 141</td>
<td>Introduction to Theatre (GT-AH1)</td>
<td>3</td>
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</tbody>
</table>

### C. Social and Behavioral Sciences (3 credits)

The Social and Behavioral Sciences use similar methods of description and analysis to study the complex behaviors of individuals and their relationships with others in families, public associations, and cultures. The objective of the Social and Behavioral Sciences requirement is to explore the forms and implications of individual and collective behaviors, their ties to formal institutions, and the methods by which they are studied.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
<td>3</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<tr>
<td>AREC 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td>3</td>
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<tr>
<td>ECON 101</td>
<td>Economics of Social Issues (GT-SS1)</td>
<td>3</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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</tbody>
</table>
ECON 212  Racial Inequality and Discrimination (GT-SS1)  3
ECON 240  Issues in Environmental Economics (GT-SS1)  3
EDUC 275  Schooling in the United States (GT-SS3)  3
GR 100  Introduction to Geography (GT-SS2)  3
HDFS 101  Individual and Family Development (GT-SS3)  3
HONR 492  Honors Senior Seminar  3
JTC 100  Media in Society (GT-SS3)  3
POLS 101  American Government and Politics (GT-SS1)  3
POLS 103  State and Local Government and Politics (GT-SS1)  3
PSY 100  General Psychology (GT-SS3)  3
PSY 152  Science of Learning  3
SOC 100  General Sociology (GT-SS3)  3
SOC 105  Social Problems (GT-SS3)  3
SOWK 110  Contemporary Social Welfare (GT-SS1)  3
SPCM 130  Relational and Organizational Communication (GT-SS3)  3

D. Historical Perspectives (3 credits)
The objective of the Historical Perspectives requirement is to engage students in an analytical, chronological study of significant, multi-dimensional human experiences. It should also provide students with a foundation for relating beliefs about the past to aspirations for the future.

AGED 210  History of Agriculture in the United States  3
AMST 100  Self/Community in American Culture, 1600-1877 (GT-AH2)  3
AMST 101  Self/Community in American Culture Since 1877 (GT-AH2)  3
ANTH 140  Introduction to Prehistory (GT-HI1)  3
ETST 250  African American History (GT-HI1)  3
ETST 252  Asian-American History (GT-HI1)  3
ETST 255  Native American History (GT-HI1)  3
HIST 100  Western Civilization, Pre-Modern (GT-HI1)  3
HIST 101  Western Civilization, Modern (GT-HI1)  3
HIST 115  The Islamic World: Late Antiquity to 1500  3
HIST 116  The Islamic World Since 1500  3
HIST 120  Asian Civilizations I (GT-HI1)  3
HIST 121  Asian Civilizations II (GT-HI1)  3
HIST 150  U.S. History to 1876 (GT-HI1)  3
HIST 151  U.S. History Since 1876 (GT-HI1)  3
HIST 170  World History, Ancient-1500 (GT-HI1)  3
HIST 171  World History, 1500-Present (GT-HI1)  3
HIST 250  African American History (GT-HI1)  3
HIST 252  Asian American History (GT-HI1)  3
HIST 255  Native American History (GT-HI1)  3
NR 320  Natural Resources History and Policy  3

E. Global and Cultural Awareness (3 credits)
The objective of the Global and Cultural Awareness requirement is to engage students in the study of particular cultural identities, explore the interactions among these cultural identities, and consider the ways in which these patterns of interaction are related to the larger global context in which they take place. Courses listed in this category may have been approved as meeting Arts and Humanities, Historical Perspectives, or Social and Behavioral Sciences in the gtPathways statewide transfer program (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html) but they do not fulfill any of those categories of the AUCC. They only satisfy category 3E, Global and Cultural Awareness, in the AUCC.

AGRI 116  Plants and Civilizations (GT-SS3)  3
AGRI 270  World Interdependence-Population and Food (GT-SS3)  3
AM 250  Clothing, Adornment and Human Behavior (GT-SS3)  3
ANTH 200  Cultures and the Global System (GT-SS3)  3
E 142  Reading Without Borders (GT-AH2)  3
E 238  20th-Century Fiction (GT-AH2)  3
E 245  World Drama (GT-AH2)  3
ETST 211  Gender in the Economy (GT-S1)  3
ETST 100  Introduction to Ethnic Studies (GT-SS3)  3
ETST 205  Ethnicity and the Media (GT-SS3)  3
ETST 253  Chican/o History and Culture (GT-HI1)  3
ETST 256  Border Crossings: People/Politics/Culture (GT-SS3)  3
HONR 293  Honors Seminar—Knowing Across Cultures (GT-SS3)  3
HORT 171  Environmental Issues in Agriculture (GT-SS3)  3
IE 116  Plants and Civilizations (GT-SS3)  3
IE 179  Globalization: Exploring Our Global Village (GT-SS3)  3
IE 270  World Interdependence-Population and Food (GT-SS3)  3
IE 370  Model United Nations  3
LB 170  World Literatures to 1500 (GT-AH2)  3
LB 171  World Literatures-The Modern Period (GT-AH2)  3
PHIL 170  World Philosophies (GT-AH3)  3
POLS 131  Current World Problems (GT-SS1)  3
POLS 232  International Relations (GT-SS1)  3
POLS 241  Comparative Government and Politics (GT-SS1)  3
SA 482  Study Abroad  1-18
SOC 205  Contemporary Race-Ethnic Relations (GT-SS3)  3
SOC 220  Global Environmental Issues (GT-SS3)  3
SOCR 171  Environmental Issues in Agriculture (GT-SS3)  3

 Certain CSU courses have been approved by the Colorado Department of Higher Education (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html) (CDHE) as general education courses guaranteed to transfer statewide among all public higher education institutions in Colorado. The subcode refers to the specific statewide general education category the course fulfills.
Early Completion of Mathematics/Composition Requirement

Analysis by Institutional Research indicates that independent of one another, completion of 30 credits, completion of a college level math, and completion of a college level composition course in a student’s first academic year increases the odds of retention and graduation. For instance, after controlling for demographic and academic preparation variables, when compared to students who complete 24-29 credits (including both a math and a composition course):

- Students who complete 30 or more credits, including math and composition, within their first academic year have 67% higher odds of retention and 76% higher odds of graduation;
- Students who complete 30 or more credits, including math but not composition, within their first academic year have 36% higher odds of retention and 68% higher odds of graduation;
- Students who complete 24 to 29 credits but do not complete either gateway course within their first academic year have 69% lower odds of retention and 71% lower odds of graduation;
- Students who complete 30 credits without including math and composition have 52% lower odds of retention and 45% lower odds of graduation compared to students who complete both gateway courses within 24-29 total completed credits indicating that the total completed credits is less important than completing both gateway courses.

The chart below displays the relative odds for six-year graduation graphically.

English Composition Requirement

CSU’s English Composition Requirement

All CSU students are required to fulfill the All-University Core Curriculum (AUCC) Intermediate Writing Requirement (AUCC Category 1A) prior to completion of 60 credits. Students can complete the AUCC Intermediate Writing requirement in one of five ways:

1. Satisfactory completion of CO 150: College Composition.
2. Achieving a score of 5 on the Advanced Placement English Composition and Literature Test; or a score of 4 or 5 on the Advanced Placement English Language and Composition Test; or placing in CO 150 -section 550 (automatic credit for CO 150) on the Composition Placement Challenge and Re-evaluation Essay.
3. Transferring equivalent credits from another college. (Students who transfer with less than 2.6 semester credits in composition will have the option of writing the Composition Placement Challenge and Re-evaluation Essay. With a score of 5, we can request the additional credit be waived).
4. Satisfactory completion of HONR 193 (Honors students only).
5. Submission of International Baccalaureate scores that document an English at the Higher Level score of 5, 6, or 7.

Credit for CO 150 will not be given for high scores on the College-Level Examination Program (CLEP).

Students (except first-semester transfer and readmitted students) who have earned 60 or more CSU and transfer semester credits and who have not met this requirement will have a COMPOSITION HOLD placed on their record. Transfer and readmitted students will be allowed the initial term of enrollment before this restriction is imposed.

What if I Have a Composition HOLD Placed on My Registration?

Before the start of every semester, undergraduate students are informed, via email from the Registrar, if they have not completed the AUCC composition requirement. After a student has earned 60 or more CSU and transfer semester credits without fulfilling the AUCC composition requirement, the email will also give notice that a Composition Hold has been placed and provide information on how to remove the Hold.

The procedure to remove a COMPOSITION HOLD is as follows:

1. You can contact the Registrar’s Office as soon as you receive the email letting you know that a Composition HOLD has been placed on your registration – you do not have to wait for your registration access time.
   - You can contact the Registrar’s Office immediately, if you are currently registered for CO 130 or have transfer credit for CO 130.
   - If you need to take the Directed Self-Placement Survey, once the Survey is completed, you can contact the Registrar’s Office.
   - If you are in the Honors Track I program, you will need to register for HONR 193.
   - If you were automatically placed into CO 130 or selected CO 130 on the Directed Self-Placement Survey , you will need to select a section that course for which to register. Then, after successful completion of CO 130, you will need to registar for CO 150 the following term. CO 150 satisfies the All-University Core Curriculum Intermediate Writing requirement (AUCC Category 1A).
   - If you were automatically placed into CO 150 or selected CO 150 on the Directed Self-Placement Survey , you will need to select a section that works with your course schedule.
   - If you were automatically placed into CO 130 or CO 150 and wish to challenge that placement , you will need to write the Composition Placement Challenge and Re-evaluation Essay as soon as possible.
   - If you chose to write the Composition Placement Challenge and Re-evaluation Essay, once your score has been entered, you can contact the Registrar’s Office (http://registrar.colostate.edu).

2. Once you have chosen a section of composition that works with your schedule, contact the Registrar’s Office in Centennial Hall by calling (970) 491-4860, or emailing registraroffice@colostate.edu. If sending an email, please do so from your RAMS email account and include your full name, CSUID number, and the CRN for the CO course for which you want to be registered. Please make sure to have the CRN of the section you have chosen available in order to expedite your request.

3. The Registrar’s Office will then remove the Composition HOLD from your academic record and register you for the composition section you
selected, which will allow you to proceed with registration starting on your designated registration date/time.

If a student drops or withdraws from the composition course or does not earn a passing grade, the grade of record will become an “F.” This grade of “F” will be included in the calculation of both the semester GPA and the cumulative GPA as a consequence of not completing the 60-credit completion requirement.

CSU’s Composition Placement Program

Critical reading and writing skills are significant components of every program and degree at CSU. Moreover, research at CSU, as well as nation-wide, demonstrates a clear connection between academic success and the ability to write effectively for various audiences. The CSU Composition Placement Program is designed to ensure that you register for the composition course most suited to your needs, CO 130: Academic Writing or CO 150: College Composition.

To learn more about CSU's Composition Placement Procedures, go to http://composition.colostate.edu/students/placement

Appeals Process

Students wishing to appeal (http://registrar.colostate.edu/forms/3364) this registration restriction must write a detailed rationale as to why they were unable to complete the course within the first 60 credits. Students must also outline their plan for completion of the requirement.

If registered for an equivalent course at another institution, students should include proof of registration. Appeals must be received by the student’s academic advisor and department head for their signatures and indication of support/lack of support of the appeal. The signed appeal must then be submitted through the Registrar’s Office, Centennial Hall, to the Vice Provost for Undergraduate Affairs who holds authority for final approval or disapproval.

In addition, a student wishing to appeal this registration restriction may also contact the English Department’s Composition Program Assistant, Sue.Russell@colostate.edu (970) 491-1898.

Mathematics Requirement

To satisfy the requirements of category 1B of the All-University Core Curriculum (AUCC), students must earn three credits in mathematics. These credits may be earned by:

1. Scoring well on the CSU Math Challenge Exam;
2. Presenting AP calculus scores of 3, 4, or 5 on either Calculus AB or Calculus BC exam or IB mathematics scores of a 4 or higher on either the standard or higher level exam (see Registrar’s Office (http://registrar.colostate.edu/transfer-credit/transfer-other-credit) for details on Advanced Placement and International Baccalaureate equivalencies);
3. Taking mathematics courses at CSU; or
4. Presenting suitable transfer credits from another accredited institution.

MPE refers to either the unproctored Math Placement Exam or the proctored Math Challenge Exam. The MPE covers pre-college algebra and college algebra, logarithmic and exponential functions, and trigonometry. All entering freshmen are required to take the MPE, unless they can satisfy point 2 or 4 above. All other students must also take the MPE and obtain a satisfactory score before taking any mathematics course, unless they can satisfy either points 2 or 4 above.

A student who displays proficiency on the MPE may place out of some or all of the pre-calculus courses—MATH 117, MATH 118, MATH 124, MATH 125, and MATH 126 without earning credit. Placement out of a course on the MPE will satisfy prerequisites for other classes. A student who demonstrates a higher level of proficiency on the Math Challenge Exam may earn credit in one or more of those courses. Only earned credits count toward the three-credit University mathematics requirement, i.e., placement out of a course will not satisfy the CSU mathematics requirement.

A student (except a first semester transfer or a first semester readmitted student) who has earned 60 or more CSU and transfer credits and who has not completed the mathematics requirements of category 1B of the All-University Core Curriculum must enroll in a course that will fulfill this requirement in order to have a hold lifted from his or her registration. If a student drops or withdraws from the course or does not earn a passing grade, the grade of record will become an “F.” This grade of “F” will be included in the calculation of both the semester GPA and the cumulative GPA as a consequence of not completing the 60-credit completion requirement as defined by this policy.

A transfer or readmitted student will be allowed the initial term of full-time enrollment before this restriction is imposed.

Appeals Process

Students wishing to appeal (http://registrar.colostate.edu/forms/3364) this registration restriction must write a detailed rationale as to why they were unable to complete the course within the first 60 credits. Students must also outline their plan for completion of the requirement.

If registered for an equivalent course at another institution, students should include proof of registration. Appeals must be received by the student’s academic advisor and department head for their signatures and indication of support/lack of support of the appeal. The signed appeal must then be submitted through the Registrar’s Office, Centennial Hall, to the Vice Provost for Undergraduate Affairs who holds authority for final approval or disapproval.
INTERDISCIPLINARY OPPORTUNITIES

- Health Professions
- Teacher Licensure/Education
- Semester at Sea
- Education Abroad

Health Professions
Center for Advising and Student Achievement
Offices in the TILT Building, Room 121

Human Health Professions Advising
CSU does not offer specific “pre-health” majors as health professions programs neither prefer nor recommend any particular undergraduate major(s). Students interested in a career in the health professions may select a major from among the many choices offered by CSU. After declaring an academic major, a student is assigned an academic advisor from that department to ensure they fulfill the requirements for that major.

Health professions advisors work with students in conjunction with their departmental advisor in determining courses to take to satisfy professional school prerequisites and helping them identify and gain the experiences needed to make them competitive candidates. Health Professions advisors assist students in planning for entrance into accredited programs of dentistry, medicine, nursing, occupational therapy, optometry, pharmacy, physical therapy, physician assistant, podiatry, chiropractic, and other human health professions and assist them in preparing their applications to those programs.

Pre-Veterinary Medicine Advising
Pre-veterinary advising provides guidance for students in any major who are interested in pursuing a career in veterinary medicine. Placement into professional veterinary medical programs is extremely competitive and a successful applicant needs to be well informed regarding course requirements and other factors considered by veterinary admissions committees.

Students work with their academic advisor to ensure that they fulfill the graduation requirements in their major and the pre-veterinary advisor to be sure that their courses also satisfy admission requirements for professional veterinary programs.

Student Clubs
Offices for several student clubs related to the health professions are located in The Institute for Learning and Teaching (TILT Building) on the Oval. Staff members serve as advisors for the Premedica, Pre-Vet, Pre-Dental, Pre-Occupational Therapy, Pre-Physical Therapy, Pre-Pharmacy, and Pre-Optometry clubs and provide assistance and support for club activities.

More information about Health Professions Advising (http://hp.casa.colostate.edu) may be found on the CASA website.

Teacher Licensure/Education
Teacher and principal licensure is available through the School of Education Center for Educator Preparation (CEP).

One of the most important ways to help people and to impact our society is through involvement in public and private schools. Teachers make lasting contributions to our nation and its many generations of learners. Teacher education programs at CSU serve the needs of individuals preparing to teach in most secondary areas, K-12 art, foreign languages, instructional technology, and music, or early childhood education. CSU is one of the public institutions in Colorado designated to offer programs leading towards a career and technical (vocational) credential. Candidates for teacher licensure are skilled in a teaching concentration and proficient in educational methodology. These students take their professional education course work concurrently while completing their subject matter courses. Candidates may complete licensure while enrolled in an undergraduate program or after completing a bachelor’s degree at an accredited university.

Endorsements available through the program include:

<table>
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<th>Endorsement</th>
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### Approved Majors for Teacher Endorsements

At CSU, the following are the approved majors for each endorsement area. Undergraduate teacher licensure candidates must be majoring in one of the approved majors that align with their endorsement area for admission to the teacher preparation program.

For detailed four-year curriculum on the degrees listed below, refer to the specific program in this catalog.

<table>
<thead>
<tr>
<th>Endorsement</th>
<th>Approved Major for Licensure</th>
<th>College</th>
<th>Program Link</th>
<th>URL</th>
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<td>English (B.A.)</td>
<td>Liberal Arts</td>
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<td>/general-catalog/colleges/liberal-arts/english/english-major-education-concentration/</td>
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</table>
Foreign Language (French, German, Spanish) | Languages, Literatures, and Cultures (B.A.) | Liberal Arts | Major in Languages, Literature, and Cultures, Teaching Endorsement | /general-catalog/colleges/liberal-arts/foreign-languages-literatures/languages-literature-cultures-major-teaching-endorsement/


Music | Music (B.M.) | Liberal Arts | Major in Music, Music Education Concentration | /general-catalog/colleges/liberal-arts/music-theatre-dance/music-bm-education-concentration/

Science | Natural Sciences (B.S.) | Natural Sciences | Major in Natural Sciences | /general-catalog/colleges/natural-sciences/natural-sciences-major/

Social Studies | History (B.A.) | Liberal Arts | Major in History, Social Studies Teaching Concentration | /general-catalog/colleges/liberal-arts/history/history-major-social-studies-teaching-concentration/

Speech | Communication Studies (B.A.) | Liberal Arts | Major in Communication Studies, Speech Teacher Licensure Concentration | /general-catalog/colleges/liberal-arts/communication-studies/communication-studies-major-speech-teacher-licensure-concentration/


Education Abroad
Office of International Programs – Laurel Hall
(970) 491-6342

Education Abroad (http://educationabroad.colostate.edu) opportunities engage students in an international arena, providing new academic perspectives, broadening knowledge of international affairs, and allowing for a deeper understanding of other cultures. In addition to enhancing a student’s degree program, education abroad provides students with direct experience developing intercultural skills necessary for success in an increasingly diverse and global workforce.

The Office of International Programs offers approximately 850 international opportunities, including for-credit and not-for-credit programs for study, research, internships and service learning. Students can maintain full-time enrollment at CSU while abroad, and credit from approved programs may be applied towards an overall degree program at CSU. Students who successfully complete an approved program (with a grade of C- or better) are eligible for a waiver of the All-University Core Curriculum Global and Cultural Awareness (AUCC 3E) requirement.

Education Abroad oversees programs in nearly every country around the world and provides support services to students, including advising, orientations, outreach, program coordination and risk management oversight. Students considering any type of international experience are required to work with the Office of International Programs in preparation for their time abroad. Advance planning helps assure that international endeavors will not unnecessarily prolong degree completion and that all health and safety preparations have been addressed. Advance planning also assures that students meet application deadlines, which can range anywhere from two months to twelve months before a program begins.

Financial Aid for Education Abroad
In most cases, CSU financial aid can be applied to cover the costs of an education abroad program. In addition, the Office of International Programs administers more than $500,000 in annual scholarships to support education abroad, which students can apply for through the Education Abroad Common Application (http://educationabroad.colostate.edu/scholarships).

Nationally competitive scholarships are also available, including the NSEP Boren and IIE Gilman awards. Students interested in scholarships should contact the Office of International Programs as early in their college career as possible since some scholarship deadlines are as much as a year in advance.

Further information on eligibility requirements, deadlines, policies, procedures, financial aid, and costs related to study abroad may be found on the Education Abroad (http://educationabroad.colostate.edu) website.
## PROGRAMS A-Z

<table>
<thead>
<tr>
<th>Academic Program</th>
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- Music, Theatre, and Dance
- Undergraduate B.A. Concentration

### Theatre, General Concentration
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- Undergraduate B.A. Concentration

### Theatre, Performance Concentration
- Music, Theatre, and Dance
- Undergraduate B.A. Concentration

### Theatre, Playwriting and Dramatic Literature Concentration
- Music, Theatre, and Dance
- Undergraduate B.A. Concentration

### Theory and Applications of Regression Models
- Statistics
- Graduate Certificate

### Tourism Management
- Human Dimensions of Natural Resources
- Graduate M.T.M., Plan C

### Toxicology
- Environmental and Radiological Health Sciences
- Graduate M.S. Plan A

### Veterinary Medicine, Doctor
- CVMBS
- Professional D.V.M.

### Watershed Science
- Ecosystem Science and Sustainability
- Graduate M.S. Plan A

### Watershed Science Minor
- Ecosystem Science and Sustainability
- Undergraduate Minor

### Women's Studies Interdisciplinary Studies
- University-Wide
- Graduate Interdisciplinary Studies Program

### Women's Study Interdisciplinary Minor
- Ethnic Studies
- Undergraduate Minor

### Zoology
- Biology
- Graduate M.S. Plan A

### Zoology Minor
- Biology
- Undergraduate Minor
COLLEGES AND PROGRAMS

Many academic programs at Colorado State University have an all-university focus and are not found in one particular college. This catalog section summarizes:

- University-Wide Instructional Programs
- Agricultural Sciences
- Business
- Engineering
- Health and Human Sciences
- Liberal Arts
- Warner College of Natural Resources
- Natural Sciences
- Veterinary Medicine and Biomedical Sciences

University-Wide Instructional Programs

Many academic programs at Colorado State University have an all-university focus and are not found in one particular college. This catalog section summarizes:

- University Interdisciplinary Studies Programs
- Division of Armed Forces Services
- Environmental Studies Programs
- Mentored Research and Artistry Program
- University Honors Program
- Peace Corps Master’s International Programs

University Interdisciplinary Studies Programs

An interdisciplinary studies program is a series of courses focused upon a particular problem or area of concern providing insight from a variety of disciplinary perspectives. The program includes a core of required courses, with some selectivity, and also a wide choice of supporting courses.

Completion of the requirements for an interdisciplinary studies program does not lead to a degree. Credits earned in interdisciplinary studies programs can be used in meeting the requirements for a degree. Courses are noted on the student’s academic record (transcript). Completion of the interdisciplinary studies program is noted on the student’s academic record (transcript) but not on the diploma.

Undergraduate

Undergraduate interdisciplinary studies programs are called Interdisciplinary Minors. A minimum of 21 credits is required for an interdisciplinary minor. A minimum of 12 of the 21 credits must be course work at the upper-division level (300-400).

Minors

- Arabic Studies Interdisciplinary Minor
- Arts Leadership and Administration Interdisciplinary Minor
- Biomedical Engineering Interdisciplinary Minor
- Conservation Biology Interdisciplinary Minor
- Energy Engineering Interdisciplinary Minor
- Environmental Affairs Interdisciplinary Minor
- Film Studies Interdisciplinary Minor
- Food Science/Safety Interdisciplinary Minor
- Gerontology Interdisciplinary Minor
- Global Environmental Sustainability Interdisciplinary Minor
- Information Science and Technology Interdisciplinary Minor
- Integrated Resource Management Interdisciplinary Minor
- International Development Interdisciplinary Minor
- Italian Studies Interdisciplinary Minor
- Latin American and Caribbean Studies Interdisciplinary Minor
- Leadership Studies Interdisciplinary Minor
- Legal Studies Interdisciplinary Minor
- Linguistics and Culture Interdisciplinary Minor
- Molecular Biology Interdisciplinary Minor
- Music, Stage, and Sports Production Interdisciplinary Minor
- Organic Agriculture Interdisciplinary Minor
- Political Communication Interdisciplinary Minor
- Religious Studies Interdisciplinary Minor
- Role of Sustainability in Peace and Reconciliation Interdisciplinary Minor
- Russian Studies Interdisciplinary Minor
- Sports Management Interdisciplinary Minor
- Sustainable Water Interdisciplinary Minor
- Women’s Study Interdisciplinary Minor

Graduate

Graduate interdisciplinary programs are called Graduate Interdisciplinary Studies Programs. No minimum number of credits is specified at the graduate level. Completion of the requirements for an interdisciplinary studies program does not lead to a degree. Credits earned in interdisciplinary studies programs can be used in meeting the requirements for a degree. Courses are noted on the student’s academic record (transcript). Completion of the interdisciplinary studies program is noted on the student’s academic record (transcript) but not on the diploma.
CSU offers interdisciplinary degree programs at the graduate level (listed below). Interdisciplinary degree programs include a series of courses from a variety of academic disciplines. The result of completing an interdisciplinary degree program is a graduate degree. See individual programs below for more details.

Certificates
- Graduate Certificate in Applied Global Stability: Agriculture
- Graduate Certificate in Applied Global Stability: Natural Resources
- Graduate Certificate in Applied Global Stability: Water Resources

Degrees

Master’s Programs
- Master of Public Health
- Master of Science in Bioengineering
- Master of Science in Cell and Molecular Biology, Plan A*
- Master of Science in Cell and Molecular Biology, Plan B*
- Master of Science in Ecology, Plan A
- Master of Science in Ecology, Plan B
- Master of Science in Ecology, Ecological Risk Assessment and Management Specialization*
- Master of Science in Ecology, Human-Environment Interaction Specialization
- Master in Arts Leadership and Cultural Management, Plan C

Ph.D. Programs
- Ph.D. in Bioengineering
- Ph.D. in Cell and Molecular Biology*
- Ph.D. in Cell and Molecular Biology, Cancer Biology Specialization
- Ph.D. in Ecology
- Ph.D. in Ecology, Ecological Risk Assessment and Management Specialization*
- Ph.D. in Ecology, Human-Environment Interaction Specialization*

Programs
- Extreme Ultraviolet and Optical Science and Technology Graduate Interdisciplinary Studies Program
- Food Science/Safety Interdisciplinary Studies Program
- International Development Interdisciplinary Studies Program
- Mathematics Graduate Interdisciplinary Studies Program
- Molecular, Cellular and Integrative Neurosciences Graduate Interdisciplinary Studies Program
- Political Economy Graduate Interdisciplinary Studies Program
- Resilience of Social Ecological Systems Interdisciplinary Studies Program
- Sustainable Peace and Reconciliation Studies Graduate Interdisciplinary Studies Program
- Systems Engineering Graduate Interdisciplinary Studies Program
- Women’s Study Interdisciplinary Studies Program (This program is being discontinued effective Spring 2018. No new students are being accepted. Students interested in this area of study should contact the department of Ethnic Studies (http://ethnicstudies.colostate.edu) for more information regarding a new graduate certificate in Gender, Power and Difference, pending final approval for accepting students in Spring 2017.)

* Please see department for program of study.

Arabic Studies Interdisciplinary Minor

Office in Andrew G. Clark Building, Room C104
languages.colostate.edu (http://languages.colostate.edu)

Coordinated by the Department of Languages, Literatures and Cultures.

The Arabic Studies Interdisciplinary Minor is designed to give students a comprehensive knowledge of different aspects of Arabic language, culture, history, and artistic expressions, according to the students’ interests. The program requires a minimum of 21 credits. Credits from study abroad programs will be properly evaluated as part of the overall program.

Contact the Department of Languages, Literatures and Cultures for details.

Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A grade of C or better is required in each course that will count toward the interdisciplinary minor.

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<td>LARA 107</td>
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<td>HIST 435</td>
<td>Jihad and Reform in Islamic History</td>
<td></td>
</tr>
<tr>
<td>HIST 438</td>
<td>The Modern Middle East</td>
<td></td>
</tr>
<tr>
<td>HIST 469</td>
<td>The Crusades</td>
<td></td>
</tr>
<tr>
<td>LARA 300</td>
<td>Third Year Arabic</td>
<td></td>
</tr>
<tr>
<td>LARA 301</td>
<td>Oral Communication - Arabic</td>
<td></td>
</tr>
<tr>
<td>POLS 449</td>
<td>Middle East Politics</td>
<td></td>
</tr>
</tbody>
</table>
have declared a major in Art, Music, Theatre, or Dance. To enroll in the Arts Leadership and Administration minor, students must Additional coursework may be required due to prerequisites. Division (300- to 400-level) credits. Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division credits with at least 12 credits greater than or equal to 300-level courses. All students are required to complete the 7 credits of Core Courses. The 14 credits of Selection Courses are chosen according to the student’s major (engineering or non-engineering). Engineering students must take at least 14 credits from group II, and non-engineering students must take from 9-11 credits from group I and from 3-5 credits from group II, for a total of 14 credits.

Effective Spring 2013

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

The undergraduate program requires completion of a minimum of 21 credits with at least 12 lower-division credits from group I and from 3-5 credits from group II, for a total of 14 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 205</td>
<td>Fundamentals of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ECON 101</td>
<td>Economics of Social Issues (GT-SS1)</td>
<td>3</td>
</tr>
<tr>
<td>LEAP 200</td>
<td>Advocacy in the Visual and Performing Arts</td>
<td>3</td>
</tr>
<tr>
<td>LEAP 220</td>
<td>Technology and the Arts in the 21st Century</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOM 101</td>
<td>Introduction to Biomedical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>or BIOM 470</td>
<td>Biomedical Engineering</td>
<td></td>
</tr>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td>4</td>
</tr>
</tbody>
</table>

**Selection Courses (minimum of 14 credits)**

I. Engineering Courses for Non-Engineering Students:
In order to fulfill the 21-credit program minimum, non-engineering students must select at least 9-11 credits from the following engineering-related courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOM 300</td>
<td>Problem-Based Learning Biomedical Engr Lab</td>
</tr>
<tr>
<td>BIOM 330</td>
<td></td>
</tr>
<tr>
<td>BIOM 400</td>
<td></td>
</tr>
<tr>
<td>BIOM 441</td>
<td>Biomechanics and Biomaterials</td>
</tr>
<tr>
<td>BIOM 476A</td>
<td>Biomedical Clinical Practicum I</td>
</tr>
<tr>
<td>or BIOM 476B</td>
<td>Biomedical Clinical Practicum II</td>
</tr>
<tr>
<td>CBE 201</td>
<td>Material and Energy Balances</td>
</tr>
<tr>
<td>CBE 210</td>
<td>Thermodynamic Process Analysis</td>
</tr>
<tr>
<td>CBE 302</td>
<td>Chemical and Biological Reactor Design</td>
</tr>
<tr>
<td>CBE 331</td>
<td>Momentum Transfer and Mechanical Separations</td>
</tr>
<tr>
<td>CBE 332</td>
<td>Heat and Mass Transfer Fundamentals</td>
</tr>
<tr>
<td>CBE 406</td>
<td>Introduction to Transport Phenomena</td>
</tr>
<tr>
<td>CBE 430</td>
<td>Process Control and Instrumentation</td>
</tr>
<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
</tr>
<tr>
<td>CIVE 261</td>
<td>Engineering Mechanics-Dynamics</td>
</tr>
<tr>
<td>ECE 202</td>
<td>Circuit Theory Applications</td>
</tr>
<tr>
<td>ECE 204</td>
<td>Introduction to Electrical Engineering</td>
</tr>
<tr>
<td>ECE 303/ STAT 303</td>
<td>Introduction to Communications Principles</td>
</tr>
<tr>
<td>ECE 331</td>
<td>Electronics Principles I</td>
</tr>
<tr>
<td>ECE 341</td>
<td>Electromagnetic Fields and Devices I</td>
</tr>
<tr>
<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
</tr>
<tr>
<td>MECH 237</td>
<td>Introduction to Thermal Sciences</td>
</tr>
<tr>
<td>MECH 307</td>
<td>Mechatronics and Measurement Systems</td>
</tr>
<tr>
<td>MECH 331</td>
<td>Introduction to Engineering Materials</td>
</tr>
<tr>
<td>MECH 342</td>
<td>Mechanics and Thermodynamics of Flow Processes</td>
</tr>
<tr>
<td>PH 245</td>
<td>Introduction to Electronics</td>
</tr>
<tr>
<td>ECE 303/ STAT 303</td>
<td>Introduction to Communications Principles</td>
</tr>
<tr>
<td>or STAT 315 Statistics for Engineers and Scientists</td>
<td></td>
</tr>
</tbody>
</table>

II. Science, Engineering, Animal Research, Bioethics, and Entrepreneurship Courses:

In order to fulfill the 21-credit program minimum, engineering students must select at least 14 credits from the following. Non-engineering students must select at least 3-5 credits.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
</tr>
<tr>
<td>BIOM 300</td>
<td>Problem-Based Learning Biomedical Engr Lab</td>
</tr>
<tr>
<td>BIOM 330</td>
<td></td>
</tr>
<tr>
<td>BIOM 400</td>
<td></td>
</tr>
<tr>
<td>BIOM 441</td>
<td>Biomechanics and Biomaterials</td>
</tr>
<tr>
<td>BIOM 476A</td>
<td>Biomedical Clinical Practicum I</td>
</tr>
<tr>
<td>or BIOM 476B</td>
<td>Biomedical Clinical Practicum II</td>
</tr>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
</tr>
<tr>
<td>BMS 325</td>
<td>Cellular Neurobiology</td>
</tr>
<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
</tr>
<tr>
<td>BMS 360</td>
<td>Fundamentals of Physiology</td>
</tr>
<tr>
<td>BMS 405</td>
<td>Nerve and Muscle-Toxins, Trauma and Disease</td>
</tr>
<tr>
<td>BMS 420</td>
<td>Cardiopulmonary Physiology</td>
</tr>
<tr>
<td>BMS 430</td>
<td>Endocrinology</td>
</tr>
<tr>
<td>BUS 205</td>
<td>Legal and Ethical Issues in Business</td>
</tr>
<tr>
<td>BZ 310</td>
<td>Cell Biology</td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
</tr>
<tr>
<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
</tr>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
</tr>
<tr>
<td>or CHEM 343</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
</tr>
<tr>
<td>HES 207</td>
<td>Anatomical Kinesiology</td>
</tr>
<tr>
<td>HES 307</td>
<td>Biomechanical Principles of Human Movement</td>
</tr>
<tr>
<td>HES 403</td>
<td>Physiology of Exercise</td>
</tr>
<tr>
<td>HES 405</td>
<td>Exercise Testing Instrumentation</td>
</tr>
<tr>
<td>HES 420</td>
<td>Electrocardiography and Exercise Management</td>
</tr>
<tr>
<td>HES 476</td>
<td>Exercise and Chronic Disease</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
</tr>
<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
</tr>
<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
</tr>
<tr>
<td>MGT 420</td>
<td>New Venture Creation</td>
</tr>
<tr>
<td>MGT 440</td>
<td>New Venture Management</td>
</tr>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
</tr>
<tr>
<td>OT 215</td>
<td>Medical Terminology</td>
</tr>
<tr>
<td>PHIL 205</td>
<td>Introduction to Ethics</td>
</tr>
<tr>
<td>PHIL 305E</td>
<td>Philosophical Issues in the Professions: Animal Science</td>
</tr>
<tr>
<td>PSY 456</td>
<td>Sensation and Perception</td>
</tr>
<tr>
<td>PSY 457</td>
<td>Sensation and Perception Laboratory</td>
</tr>
</tbody>
</table>

**Total Credits** 21

---

1 Only three credits of non-technical courses may count toward minimum requirements.

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### Cell and Molecular Biology

Office in the Student Services Building, Room 108E  
(970) 491-0241  
cmb@colostate.edu  
cmb.colostate.edu (http://cmb.colostate.edu)

Howard Liber, Director  
Lori Williams, Coordinator

The graduate program in Cell and Molecular Biology is an interdisciplinary degree-granting program that involves over 100 faculty members from 13 departments and 5 colleges who share common interests in cell and molecular biology. The program offers training leading to the M.S. and Ph.D. degrees in Cell and Molecular Biology; there also is a Cancer Biology Specialization, shown below. The program includes a core of lecture courses in advanced molecular genetics and cell biology, in laboratory research techniques, and in ethical conduct of science, as well as elective courses in specialized areas and in grant writing, a graduate
seminar series in which students present their research, and a weekly seminar series for presentations by CSU faculty and nationally prominent scientists each year. Core courses typically are completed during the first year. On average, the M.S. degree is completed within two years and the Ph.D. degree within five years. Current focus areas of research include, but are not limited to: cancer biology, infectious diseases, metabolism, neuroscience, plant biology, regulation of gene expression, reproductive biology, structural biology, and genomics and computational biology.

Students interested in this graduate program should refer to the Cell and Molecular Biology (http://www.cmb.colostate.edu) website for further details.

**Ph.D. in Cell and Molecular Biology, Cancer Biology Specialization**

Graduate School, Colleges of Natural Sciences, Veterinary Medicine, and Biomedical Sciences, Department of Cell and Molecular Biology

**Effective Spring 2014**

A maximum of 30 credits at the master’s degree level may be accepted toward the Ph.D. A professional post baccalaureate degree in Medicine, Veterinary Medicine, Dentistry, Pharmacy, Law, or Divinity may be accepted for a maximum of 30 credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 563</td>
<td>Molecular Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BC 565</td>
<td>Molecular Regulation of Cell Function</td>
<td>4</td>
</tr>
<tr>
<td>or CM 501</td>
<td>Advanced Cell Biology</td>
<td></td>
</tr>
<tr>
<td>CM 502</td>
<td>Techniques in Molecular &amp; Cellular Biology</td>
<td>2</td>
</tr>
<tr>
<td>CM 601</td>
<td>Responsible Conduct of Research in CMB</td>
<td>1-3</td>
</tr>
<tr>
<td>or CM 666</td>
<td>Science and Ethics</td>
<td></td>
</tr>
<tr>
<td>CM 792</td>
<td>Cell and Molecular Biology Seminar</td>
<td>4</td>
</tr>
<tr>
<td>CM 793</td>
<td>Seminar</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 510</td>
<td>Cancer Biology</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 611</td>
<td>Cancer Genetics</td>
<td>2</td>
</tr>
</tbody>
</table>

**Research/Dissertation**

Select 47-49 credits from the following: ³  47-49

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM 799</td>
<td>Dissertation</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits**  72

1 CM 792 must be taken a minimum of 4 times for one credit each time.
2 CM 793 must be taken a minimum of 3 times for one credit each time.
3 Students must select enough dissertation credits or other coursework to bring the program total to a minimum of 72 credits, with approval of graduate advisory committee.

**Conservation Biology Interdisciplinary Minor**

Office in Forestry Building, Room 123  (970) 491-6675

Conservation Biology is a scientific discipline and management context that deals with the diversity of life in ecosystems. Humans have tremendous effects on other species and ecosystems on Earth, and Conservation Biology considers these effects, and how our impacts can be altered to sustain diverse and healthy ecosystems.

Conservation Biology encompasses a wide range of biological sciences such as genetics, evolution, and physiology, as well as a wide range of ecological sciences such as biodiversity, competition, predator/prey relations, and long-term dynamics.

This university-wide undergraduate minor addresses contemporary environmental issues that deal with biological diversity and prepares students to play an active role in the maintenance of biological diversity.

The interdisciplinary minor in Conservation Biology in the Warner College of Natural Resources at CSU is a minor that can be included with a wide range of majors to form a strong bachelor’s degree program.

**Effective Spring 2013**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

**Additional coursework may be required due to prerequisites.**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 220</td>
<td>Introduction to Evolution</td>
<td>3-4</td>
</tr>
<tr>
<td>BZ 350</td>
<td>Molecular and General Genetics</td>
<td></td>
</tr>
<tr>
<td>SOCR 330</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td>3</td>
</tr>
<tr>
<td>NR 300</td>
<td>Biological Diversity</td>
<td>3</td>
</tr>
<tr>
<td>SOC 220</td>
<td>Global Environmental Issues (GT-SS3)</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 9-10 credits from the following: ²

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 349</td>
<td>Tropical Ecology and Evolution</td>
<td>9-10</td>
</tr>
<tr>
<td>F 310</td>
<td>Forest and Rangeland Ecogeography</td>
<td></td>
</tr>
<tr>
<td>or RS 310</td>
<td>Rangeland and Forest Ecogeography</td>
<td></td>
</tr>
<tr>
<td>F 311</td>
<td>Forest Ecology</td>
<td></td>
</tr>
<tr>
<td>FW 400</td>
<td>Conservation of Fish in Aquatic Ecosystems</td>
<td></td>
</tr>
<tr>
<td>FW 469</td>
<td>Conservation and Management of Large Mammals</td>
<td></td>
</tr>
<tr>
<td>FW 477</td>
<td>Wildlife Habitat Use and Management</td>
<td></td>
</tr>
<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
<td></td>
</tr>
<tr>
<td>NR 353</td>
<td>Global Change Ecology, Impacts and Mitigation</td>
<td></td>
</tr>
<tr>
<td>NR 440</td>
<td>Applications in Conservation Planning</td>
<td></td>
</tr>
<tr>
<td>NR 460</td>
<td>Wilderness Management</td>
<td></td>
</tr>
<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
<td></td>
</tr>
</tbody>
</table>
The Energy Engineering interdisciplinary minor is designed to provide students in Engineering and the sciences with an understanding of renewable and non-renewable energy systems; clean energy technologies; basic principles of operation of energy extraction, conversion, storage, and transmission systems; and depth in current and new energy methods and applications (e.g., PV, batteries, biofuels, etc.).

The goal of the program is to empower engineers and scientists to be technological catalysts for sustainable solutions to the grand challenges of energy.

The interdisciplinary minor requires completion of 22-24 credits, with at least 12 credits greater than or equal to 300-level courses. All undergraduates are required to complete 5 credits of core courses and a 3-credit science elective. The remaining 14-16 credits of technical electives are chosen according to the student's major and interests.

Effective Fall 2012

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 465</td>
<td>Electrical Energy Generation Technologies</td>
<td>3</td>
</tr>
<tr>
<td>MECH 303</td>
<td>Energy Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

Core Science Energy Elective

Select one course from the following:

- ATS 150 Science of Global Climate Change | 3 |
- BZ 353/ NR 353 Global Change Ecology, Impacts and Mitigation | |

Core Engineering Science Energy Elective

Select one course from the following:

- CBE 210 Thermodynamic Process Analysis | 3 |
- ECE 341 Electromagnetic Fields and Devices I | |
- MECH 237 Introduction to Thermal Sciences | |
- MECH 337 Thermodynamics | |
- PH 361 Physical Thermodynamics | |

Select a minimum of 11 credits from the following:

- ECE 342 Electromagnetic Fields and Devices II | |
- ECE 411 Control Systems | |
- ECE 441 Optical Electronics | |
- ECE 444 Antennas and Radiation | |
- ECE 461 Power Systems | |
- ECE 466 Integrated Lighting Systems | |
- MECH 417 Control Systems | |
- MECH 432 Engineering of Nanomaterials | |
- MECH 437 Internal Combustion Engines | |
- MECH 463 Building Energy Systems | |
- MECH 468 Space Propulsion and Power Engineering | |

Total Credits: 23-24

1. Select enough credits in consultation with engineering academic advisor to bring program total to a minimum of 23 credits.

Environmental Affairs Interdisciplinary Minor

Clark Building, Room C346
environmental.colostate.edu (http://environmental.colostate.edu/index)

Coordinated by a Faculty Advisory Board

The Environmental Affairs interdisciplinary minor is designed for students with a particular interest in environmental topics, focusing on a core of social sciences and humanities courses that are supplemented with required science courses, as well as environmental electives from six colleges. Courses address domestic and international issues of concern with both current and historical perspectives, and will provide students with a well-rounded program of study. The program is open to all students and designed to be an additional component to the student's major. CSU has environmental expertise and this program provides undergraduate students with an opportunity to broaden their education as they prepare themselves for environmental careers or graduate study.

Program details are available from the Department of Political Science, College of Liberal Arts.

Effective Spring 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must earn a minimum grade of C for all courses taken for the interdisciplinary minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 330</td>
<td>Human Ecology</td>
<td></td>
</tr>
<tr>
<td>ANTH 414/ ETST 414</td>
<td>Development in Indian Country</td>
<td></td>
</tr>
<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
<td></td>
</tr>
</tbody>
</table>

Select three courses with three different subject codes from the following:

- ANTH 330 Human Ecology
- ANTH 414/ ETST 414 Development in Indian Country
- ANTH 415 Indigenous Ecologies and the Modern World
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 450</td>
<td>Hunter-Gatherer Ecology</td>
</tr>
<tr>
<td>ANTH 453</td>
<td>Impacts on Ancient Environments</td>
</tr>
<tr>
<td>E 339</td>
<td>Literature of the Earth</td>
</tr>
<tr>
<td>E 403</td>
<td>Writing the Environment</td>
</tr>
<tr>
<td>ECON 340/AREC 340</td>
<td>Introduction: Economics of Natural Resources</td>
</tr>
<tr>
<td>GR 410</td>
<td>Climate Change: Science, Policy, Implications</td>
</tr>
<tr>
<td>HIST 353</td>
<td>U.S.-Mexico Borderlands</td>
</tr>
<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
</tr>
<tr>
<td>HIST 463</td>
<td>Science and Technology in Modern History</td>
</tr>
<tr>
<td>HIST 470</td>
<td>World Environmental History, 1500-Present</td>
</tr>
<tr>
<td>HIST 471</td>
<td>History of Antarctica, 1800-Present</td>
</tr>
<tr>
<td>HIST 476</td>
<td>History of America's National Parks</td>
</tr>
<tr>
<td>JTC 461</td>
<td>Writing About Science, Health, and Environment</td>
</tr>
<tr>
<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
</tr>
<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
</tr>
<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
</tr>
<tr>
<td>POLS 362</td>
<td>Global Environmental Politics</td>
</tr>
<tr>
<td>POLS 462</td>
<td>Globalization, Sustainability, and Justice</td>
</tr>
<tr>
<td>SOC 220</td>
<td>Global Environmental Issues (GT-SS3)</td>
</tr>
<tr>
<td>SOC 321</td>
<td>Soil, Environment, and Society</td>
</tr>
<tr>
<td>SOC 322</td>
<td>Introduction to Environmental Justice</td>
</tr>
<tr>
<td>SOC 460</td>
<td>Society and Environment</td>
</tr>
<tr>
<td>SOC 463</td>
<td>Sociology of Disaster</td>
</tr>
<tr>
<td>SPCM 429</td>
<td>Environmental Discourse</td>
</tr>
</tbody>
</table>

**Environmental Science**

A. Select one course from the following: 3

- ERHS 220 Environmental Health
- ESS 210/GR 210 Physical Geography
- F 310/RS 310 Forest and Rangeland Ecogeography
- GEOL 122 The Blue Planet: Geology of Our Environment (GT-SC2) ¹
- GEOL 124 Geology of Natural Resources (GT-SC2) ¹
- LIFE 320 Ecology
- NR 120A Environmental Conservation (GT-SC2)
- NR 120B Environmental Conservation
- NR 130 Global Environmental Systems (GT-SC2)
- SPCM 240 Introductory Soil Science

B. Select a second course from the A list OR select one course from the B list below OR select another science course in consultation with advisor. Courses in B must have a strong environmental focus. 3

- AGRI 116/IE 116 Plants and Civilizations (GT-SS3)
- ATS 350 & ATS 351 Introduction to Weather and Climate and Introduction to Weather and Climate Laboratory
- BSPM 102 Insects, Science, and Society (GT-SC2)
- CIVE 322 Basic Hydrology
- CIVE 413 Environmental River Mechanics
- CIVE 425 Soil and Water Engineering

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**Liberal Arts Electives**

A. Select one course from the list below OR select a different course with a strong environmental focus with approval of advisor. Course(s) selected here may not also be used to fulfill the Core requirement above. 3

- AGRI 562/SOCR 562 Sociology of Food Systems and Agriculture
- ANTH 330 Human Ecology
- ANTH 450 Hunter-Gatherer Ecology
- ANTH 453 Impacts on Ancient Environments
- E 339 Literature of the Earth
- E 403 Writing the Environment
- ECON 240/AREC 240 Issues in Environmental Economics (GT-SS1)
- ECON 340/AREC 340 Introduction: Economics of Natural Resources
- ECON 344 Economics of Energy Resources
- ECON 346/AREC 346 Economics of Outdoor Recreation
- ETST 414/ANTH 414 Development in Indian Country
- GR 410 Climate Change: Science, Policy, Implications
- HIST 351 American West to 1900
- HIST 352 American West Since 1900
- HIST 353 U.S.-Mexico Borderlands
- HIST 355 American Environmental History
- HIST 463 Science and Technology in Modern History
- HIST 470 World Environmental History, 1500-Present
- HIST 471 History of Antarctica, 1800-Present
- HIST 476 History of America's National Parks
- HONR 492 Honors Senior Seminar
- JTC 461 Writing About Science, Health, and Environment
- PHIL 320 Ethics of Sustainability
- PHIL 330/AGRI 330 Agricultural and Food System Ethics
- PHIL 345 Environmental Ethics
- POLS 361 U.S. Environmental Politics and Policy ¹
- POLS 362 Global Environmental Politics ¹
Colorado State University

POLS 462 Globalization, Sustainability, and Justice
SOC 220 Global Environmental Issues (GT-SS3)
SOC 320 Population-Natural Resources and Environment
SOC 321 Soil, Environment, and Society
SOC 322 Introduction to Environmental Justice
SOC 364 Agriculture and Global Society
SOC 460 Society and Environment
SOC 461 Water, Society, and Environment
SOC 463 Sociology of Disaster
SOC 564 Environmental Justice

Select from Other Colleges
Select a minimum of three credits from the list below
OR select a different course with a strong environmental component with approval from advisor.

AGRI 330/PHIL 330 Agricultural and Food System Ethics
AREC 202 Agricultural and Resource Economics (GT-SS1)
AREC 240/ECON 240 Issues in Environmental Economics (GT-SS1)
AREC 340/ECON 340 Introduction: Economics of Natural Resources
AREC 342 Water Law, Policy, and Institutions
AREC 346/ECON 346 Economics of Outdoor Recreation
AREC 375 Agricultural Law
AREC 460 Ag- and Resource-Based Economic Development
AREC 478 Agricultural Policy
CIVE 438 Environmental Engineering Concepts
CIVE 439/CBE 439 Environmental Engineering Chemical Concepts
CIVE 440 Nonpoint Source Pollution
CON 450/INTD 450 Travel Abroad-Sustainable Building
ERHS 410 Environmental Health and Waste Management
ERHS 446 Environmental Toxicology
F 322 Economics of the Forest Environment
F 330 Timber Harvesting and the Environment
GR 320 Cultural Geography
GR 345 Geography of Hazards
HORT 466 Urban and Community Forestry
LAND 110 Introduction to Landscape Architecture
LAND 120 History of the Designed Landscape
NR 320 Natural Resources History and Policy
NR 355 Contemporary Environmental Issues
NR 365 Environmental Education
NRRT 330 Social Aspects of Natural Resource Management
NRRT 462 Environmental Communication-Natural Resources
PSY 316 Environmental Psychology
SOCR 320 Forage and Pasture Management
SOCR 370 Irrigation Principles
SOCR 377 Geographic Information Systems in Agriculture

Total Credits 21

1 GEOL 121 is also recommended.
2 Offered as a telecourse course only.

Extreme Ultraviolet and Optical Science and Technology Graduate Interdisciplinary Studies Program

Coordinated by a Faculty Advisory Board

The Extreme Ultraviolet Science and Technology Graduate interdisciplinary studies program is designed to serve individuals who are seeking to gain knowledge and experience in the generation and applications of coherent extreme ultraviolet or soft x-ray light. This type of light holds great potential in applications in nanotechnology, nanoelectronics, photochemistry, material science, and biology. While in the past the use of coherent EUV light required a trip to a national facility, new developments in compact sources make it widely available. The objective of the program is to provide scientists or engineers many of the fundamentals required to generate or proficiently make use of this portion of the electromagnetic spectrum.

This interdisciplinary studies program is inherently interdisciplinary including: lasers, optical, plasma, material, chemical and biological sciences, and engineering. With its NSF Center for Extreme Ultraviolet Science and Technology, a partnership with the University of Colorado and the University of California, Berkeley, CSU has unique expertise in this area.

The program is open to graduate students, and professionals, who hold a B.S. degree in engineering, physics, chemistry, biology, mathematics, or other scientific discipline. The program is offered through the Department of Electrical and Computer Engineering, College of Engineering, CSU.

The program requires a total of fifteen credits comprising six core credits and nine electives. The six core credits are two very fundamental courses that any graduate student with a background in hard sciences and engineering could master. This, coupled with the fact that graduate students in any discipline are not held to undergraduate prerequisite courses, make this interdisciplinary studies program widely accessible. Elective credits are tailored to the candidate’s interests from the major the student pursues. Within these a course in another discipline outside the major of the candidate must be included.

Effective Fall 2008

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECE 504</td>
<td>Physical Optics</td>
<td>3</td>
</tr>
<tr>
<td>ECE 650</td>
<td>Extreme Ultraviolet and Soft X-Ray Radiation</td>
<td>3</td>
</tr>
<tr>
<td>Elective Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 9 credits from the following:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Film Studies Interdisciplinary Minor

Program details are available from the Communications Studies Department.

Contact:
- Hye Seung Chung  
  Hye.Chung@colostate.edu
- Scott Diffrient  
  Scott.Diffrient@colostate.edu

Film Studies is an interdisciplinary academic discipline that deals with historical, theoretical, and critical approaches to films; it is concerned with exploring the narrative, artistic, cultural, economic, and political implications of the cinema. The United States’ film industry is second worldwide only to India and continues to grow, as does the study of film. A minor in Film Studies will enable you to develop media fluency in film: the ability to analyze, contextualize, and use the medium within the broad context of humanistic studies. It will provide you with a solid background in critical thinking and writing, and skills that will serve you well in any career you choose.

**Effective Fall 2014**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPCM 350</td>
<td>Evaluating Contemporary Film</td>
<td>3</td>
</tr>
</tbody>
</table>

Select a minimum of 18 credits, of which at least 15 must be upper-division (300- to 400-level), from the following list:

- E 350 The Gothic in Literature and Film
- ETST 320 Ethnicity and Film: Asian-American Experience
- ETST 354 Black Cinema and Media
- ETST 425 Indigenous Film and Video
- ETST 454/ SPCM 454 Chicano/a Film and Video
- JTC 456/ LB 456 Documentary Film as a Liberal Art
- LCHI 365 Introduction to Chinese Cinema Studies ¹
- LFRE 365 Introduction to French Cinema Studies ¹
- LGEN 465A Studies in Foreign Film: The Americas  or LGEN 465B Studies in Foreign Film: Asia  or LGEN 465C Studies in Foreign Film: Europe  or LGEN 465D Studies in Foreign Film: Africa
- LGER 365 Introduction to German Cinema Studies ¹
- LITA 365 Studies in Foreign Film-Italian ¹
- LJPN 365 Introduction to Japanese Cinema Studies ¹
- LRUS 365 Introduction to Russian Cinema Studies ¹
- LSPA 365 Introduction to Spanish Cinema ¹
- LSPA 465A Studies in Foreign Film: Spain ¹
- LSPA 465B Studies in Foreign Film: Latin America ¹
- SPCM 278C Communication Skills: Film Festivals
- SPCM 354 History and Appreciation of Film
- SPCM 356 Asians in the U.S. Media
- SPCM 357 Film and Social Change
- SPCM 358 Gender and Genre in Film
- SPCM 455/ LB 455 Narrative Fiction Film as a Liberal Art

| Total Credits | 21 |

¹ Course is taught in the respective language.

### Food Science/Safety Interdisciplinary Minor

Office in Gifford Hall, Room 230
(970) 491-7180
fshn.chhs.colostate.edu/students/index.aspx (http://fshn.chhs.colostate.edu/students)

Coordinated by a Faculty Advisory Board

Are you interested in the safety and quality of food from “farm to fork”? The Food Science/Safety interdisciplinary studies programs provide students with the interdisciplinary background necessary for understanding the roles and responsibilities of growers, producers, processors, retailers, consumers, and others working within the food system to ensure that food is safe and healthful. These programs are a cooperative effort by faculty from several departments and colleges within CSU who share a common interest in food quality and safety, and integrated production and processing. Students enrolling in a program will receive their degree from their home department. Completion
of requirements for the interdisciplinary minor will be noted on the transcript.

The programs are available at both the undergraduate and graduate levels. Program details are available from the Office of the Dean in the Colleges of Agricultural Sciences (http://agsci.colostate.edu), Health and Human Sciences (http://www.chhs.colostate.edu), or Veterinary Medicine and Biomedical Sciences (http://csu-cvmbs.colostate.edu/Pages/default.aspx), or from one of the collaborating departments.

The interdisciplinary minor in Food Science/Safety is designed to complement the student’s major. It consists of a core of required courses (6 credits), foundation courses in the sciences (6 credits), and a selection of advanced courses (12 credits minimum) taken from at least three of the six collaborating departments: Animal Sciences; Environmental and Radiological Health Sciences; Food Science and Human Nutrition; Horticulture and Landscape Architecture; Microbiology, Immunology, and Pathology; and Soil and Crop Sciences.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

**Effective Fall 2016**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Required Courses</strong></td>
<td></td>
</tr>
<tr>
<td>Select one from the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>FTEC 400</td>
<td>Food Safety ¹</td>
<td></td>
</tr>
<tr>
<td>MIP 334</td>
<td>Food Microbiology ¹</td>
<td></td>
</tr>
<tr>
<td>Select one from the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>LIFE 205</td>
<td>Microbial Biology</td>
<td></td>
</tr>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Foundation Courses</strong></td>
<td>6</td>
</tr>
<tr>
<td>Select a minimum of 6 credits from the following:</td>
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</tr>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
<td></td>
</tr>
<tr>
<td>or BC 401</td>
<td>Comprehensive Biochemistry I</td>
<td></td>
</tr>
<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
<td></td>
</tr>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry ²</td>
<td></td>
</tr>
<tr>
<td>ERHS 320</td>
<td>Environmental Health - Water and Food Safety</td>
<td></td>
</tr>
<tr>
<td>FTEC 110</td>
<td>Food-From Farm to Table</td>
<td></td>
</tr>
<tr>
<td>FTEC 447</td>
<td>Food Chemistry</td>
<td></td>
</tr>
<tr>
<td>HORT 100</td>
<td>Horticultural Science</td>
<td></td>
</tr>
<tr>
<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
<td></td>
</tr>
<tr>
<td>or MIP 302</td>
<td>General Microbiology Laboratory</td>
<td></td>
</tr>
<tr>
<td>MIP 101</td>
<td>Introduction to Human Disease (GT-SC2)</td>
<td></td>
</tr>
<tr>
<td>SOCR 100</td>
<td>General Crops</td>
<td></td>
</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advanced Courses</strong></td>
<td>12</td>
</tr>
<tr>
<td>Select a minimum of 12 credits, which must include at least three subject codes from the collaborating departments (ANEQ, ERHS, FSHN/FTEC, HORT, MIP, SOCR), from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANEQ 300L</td>
<td>Topics in Animal Sciences: Quality Assurance</td>
<td></td>
</tr>
<tr>
<td>ANEQ 360</td>
<td>Principles of Meat Science</td>
<td></td>
</tr>
<tr>
<td>ANEQ 361</td>
<td>Introduction to Meat Product Evaluation</td>
<td></td>
</tr>
<tr>
<td>ANEQ 460</td>
<td>Meat Safety</td>
<td></td>
</tr>
<tr>
<td>ANEQ 470</td>
<td>Meat Processing Systems</td>
<td></td>
</tr>
<tr>
<td>BTEC 306</td>
<td>Bioprocess Engineering</td>
<td></td>
</tr>
<tr>
<td>BTEC 306/BIOM 306</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERHS 220</td>
<td>Environmental Health</td>
<td></td>
</tr>
<tr>
<td>ERHS 332</td>
<td>Principles of Epidemiology</td>
<td></td>
</tr>
<tr>
<td>ERHS 430</td>
<td>Human Disease and the Environment</td>
<td></td>
</tr>
<tr>
<td>FSHN 300</td>
<td>Food Principles and Applications</td>
<td></td>
</tr>
<tr>
<td>FSHN 350</td>
<td>Human Nutrition</td>
<td></td>
</tr>
<tr>
<td>FSHN 496E</td>
<td>Group Study in Dietetics and Nutrition: Food Safety</td>
<td></td>
</tr>
<tr>
<td>FTEC 350</td>
<td>Fermentation Microbiology</td>
<td></td>
</tr>
<tr>
<td>FTEC 400</td>
<td>Food Safety ¹</td>
<td></td>
</tr>
<tr>
<td>FTEC 430</td>
<td>Sensory Evaluation of Fermented Products</td>
<td></td>
</tr>
<tr>
<td>FTEC 460</td>
<td>Brewing Science and Technology</td>
<td></td>
</tr>
<tr>
<td>HORT 277</td>
<td>Introduction to Enology</td>
<td></td>
</tr>
<tr>
<td>HORT 401</td>
<td>Medicinal and Value-Added Uses of Plants</td>
<td></td>
</tr>
<tr>
<td>HORT 424/SOCR 424</td>
<td>Topics in Organic Agriculture</td>
<td></td>
</tr>
<tr>
<td>HORT 450A</td>
<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
<td></td>
</tr>
<tr>
<td>HORT 450B</td>
<td>Horticulture Food Crops: Warm Season Vegetable Production</td>
<td></td>
</tr>
<tr>
<td>HORT 450C</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
<td></td>
</tr>
<tr>
<td>HORT 450D</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
<td></td>
</tr>
<tr>
<td>HORT 454</td>
<td>Horticulture Crop Production and Management</td>
<td></td>
</tr>
<tr>
<td>HORT 477</td>
<td>Enology-History and Winemaking</td>
<td></td>
</tr>
<tr>
<td>MIP 302</td>
<td>General Microbiology Laboratory ³</td>
<td></td>
</tr>
<tr>
<td>MIP 315</td>
<td>Human and Animal Disease</td>
<td></td>
</tr>
<tr>
<td>MIP 334</td>
<td>Food Microbiology ¹</td>
<td></td>
</tr>
<tr>
<td>MIP 335</td>
<td>Food Microbiology Laboratory</td>
<td></td>
</tr>
<tr>
<td>SOCR 330</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
<tr>
<td>SOCR 430</td>
<td>Applications of Plant Biotechnology</td>
<td></td>
</tr>
<tr>
<td>SOCR 460/ HORT 460</td>
<td>Plant Breeding</td>
<td></td>
</tr>
<tr>
<td>Independent Study/Group Study/Internship ⁴</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

500-level courses that may be selected as Advanced Courses by high-achieving undergraduates: ⁵

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANEQ 522</td>
<td>Animal Metabolism</td>
</tr>
<tr>
<td>ANEQ 565</td>
<td>Interpreting Animal Science Research</td>
</tr>
<tr>
<td>ANEQ 567</td>
<td>HACCP Meat Safety</td>
</tr>
<tr>
<td>FTEC 570</td>
<td>Food Product Development</td>
</tr>
<tr>
<td>FTEC 572</td>
<td>Food Biotechnology</td>
</tr>
<tr>
<td>FTEC 574</td>
<td>Current Issues in Food Safety</td>
</tr>
<tr>
<td>FTEC 576</td>
<td>Cereal Science</td>
</tr>
<tr>
<td>FTEC 578</td>
<td>Bioactives and Probiotics for Health</td>
</tr>
<tr>
<td>MIP 540</td>
<td>Biosafety in Research Laboratories</td>
</tr>
</tbody>
</table>
### Food Science/Safety Interdisciplinary Studies Program

Gifford Hall, Room 230  
(970) 491-7180  
fshn.chhs.colostate.edu/students/index.aspx

Coordinated by a Faculty Advisory Board

Are you interested in the safety and quality of food from “farm to fork”? The Food Science/Safety interdisciplinary studies programs provide students with the interdisciplinary background necessary for understanding the roles and responsibilities of growers, producers, processors, retailers, consumers, and others working within the food system to ensure that food is safe and healthful. These programs are a cooperative effort by faculty from several departments and colleges within CSU who share a common interest in food quality and safety, and integrated production and processing. Students enrolling in a program will receive their degree from their home department. Completion of requirements for the interdisciplinary studies program will be noted on the transcript.

The programs are available at both the undergraduate and graduate levels. Program details are available from the Office of the Dean in the Colleges of Agricultural Sciences, Health and Human Sciences, or Veterinary Medicine and Biomedical Sciences, or from one of the collaborating departments.

The interdisciplinary minor in Food Science/Safety is designed to complement the student’s major. It consists of a core of required courses (6 credits), foundation courses in the sciences (6 credits), and a selection of advanced courses (12 credits minimum) taken from at least three of the six collaborating departments: Animal Sciences; Environmental and Radiological Health Sciences; Food Science and Human Nutrition; Horticulture and Landscape Architecture; Microbiology, Immunology, and Pathology; and Soil and Crop Sciences.

The international reputation of the faculty members and their ability to attract strong extramural support for research in the areas of food science and food safety resulted in the creation of the Food Science/Safety graduate interdisciplinary studies program. Focusing on interdisciplinary research and education, this program is a cooperative effort by faculty in seven departments: Animal Sciences; Clinical Sciences; Environmental and Radiological Health Sciences; Food Science and Human Nutrition; Horticulture and Landscape Architecture; Microbiology, Immunology, and Pathology; and Soil and Crop Sciences.

Faculty research interests include food microbiology, food safety education, food processing, and integrated production/processing. Students interested in the safety and processing of foods and commodities are encouraged to apply.

Students wishing to pursue the Food Science/Safety Graduate Interdisciplinary Studies Program (http://fshn.chhs.colostate.edu/students/graduate/masters/isp-food-safety) must declare their intent with the chair of the Faculty Advisory Board. The program is customized to fit the student’s interests and long-term objectives. Students are strongly encouraged to interact with faculty from more than one department. Basic training in food science comes from an integrated curriculum featuring core courses in food science, microbiology, nutrition, and commodity production. Opportunities exist for students to rotate through various laboratories. Students also participate in a weekly interdisciplinary group study course that includes papers given by students, participating faculty, and distinguished visiting scientists, and visits to member laboratories. The group study course is designed to enhance interaction and facilitate research opportunities among the food science/safety community, including students, faculty, postdoctoral fellows, and staff. It may be offered by the participating departments on a rotational basis.

Students receive a degree from their home department and an endorsement on their transcript indicating successful completion of the program requirements.

### Effective Fall 2011

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MIP 334</td>
<td>Food Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 696A</td>
<td>Group Study: Food Science</td>
<td>1-2</td>
</tr>
<tr>
<td>FTEC 400</td>
<td>Food Safety</td>
<td>3</td>
</tr>
<tr>
<td>Thesis or dissertation in home department</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Supporting Courses

Select a minimum of 6 credits from the following courses, to include at least two subject codes:  

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRI 570</td>
<td>Issues in Animal Agriculture</td>
<td></td>
</tr>
<tr>
<td>VS 570</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANEQ 470</td>
<td>Meat Processing Systems</td>
<td></td>
</tr>
<tr>
<td>ANEQ 567</td>
<td>HACCP Meat Safety</td>
<td></td>
</tr>
<tr>
<td>ANEQ 660</td>
<td>Topics in Meat Safety</td>
<td></td>
</tr>
<tr>
<td>ANEQ 676</td>
<td>Molecular Approaches to Food Safety</td>
<td></td>
</tr>
<tr>
<td>ERHS 532</td>
<td>Epidemiologic Methods</td>
<td></td>
</tr>
<tr>
<td>FTEC 570</td>
<td>Food Product Development</td>
<td></td>
</tr>
<tr>
<td>FTEC 572</td>
<td>Food Biotechnology</td>
<td></td>
</tr>
<tr>
<td>FTEC 574</td>
<td>Current Issues in Food Safety</td>
<td></td>
</tr>
<tr>
<td>FTEC 576</td>
<td>Cereal Science</td>
<td></td>
</tr>
<tr>
<td>FTEC 578</td>
<td>Bioactives and Probiotics for Health</td>
<td></td>
</tr>
<tr>
<td>HORT 401</td>
<td>Medicinal and Value-Added Uses of Plants</td>
<td></td>
</tr>
<tr>
<td>HORT 424/SCOR 424</td>
<td>Topics in Organic Agriculture</td>
<td></td>
</tr>
<tr>
<td>HORT 675</td>
<td>Plant Stress Physiology</td>
<td></td>
</tr>
<tr>
<td>MIP 335</td>
<td>Food Microbiology Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

1. If both FTEC 400 and MIP 334 are taken, credit for one class may be used for Advanced Courses credit.
2. Or higher level organic chemistry course.
3. Cannot double count as a Foundation course.
4. Maximum of three upper-division (300- or 400-level) credits allowed for Independent Study/Group Study/Internship (must be food related). Select from subject codes ANEQ, ERHS, FSHN, FTEC, HORT, MIP, SOCR.
5. With approval of advisor.
Gerontology Interdisciplinary Minor

Office in Behavioral Sciences Building, Room 303
(970) 491-5558

Department of Human Development and Family Studies

The Gerontology Interdisciplinary Minor is a cooperative effort among faculty from different departments and colleges of CSU who share a common interest in gerontology, the study of human aging. The primary purpose of the program is to provide students with background academic knowledge and practicum/ internship experience to work effectively with and for older adults in a variety of settings, and to enter professions in which there is a need to combine insight and skills derived from their major with knowledge about older individuals and the aging process.

For information about the program, please consult with your academic advisor or the Gerontology Interdisciplinary Minor.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A grade of C or better is required in each course that is a core requirement for the interdisciplinary minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
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</tr>
<tr>
<td>HDFS 201</td>
<td>Perspectives in Gerontology</td>
<td>3</td>
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<tr>
<td>HDFS 312</td>
<td>Adult Development-Middle Age and Aging</td>
<td>3</td>
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<tr>
<td>SOWK 371E</td>
<td>Social Work with Selected Populations: Social Gerontology</td>
<td>3</td>
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</tbody>
</table>

FSHN 444 Nutrition and Aging
or FSHN 459 Nutrition in the Life Cycle
1-3

HES 444 Successful Aging: Role of Physical Activity
or HES 434 Physical Activity Throughout the Lifespan
2-3

Select a minimum of 3 credits internship/field placement directly related to aging from the following:

AHS 487 Internship in Human Services

HDFS 488A Field Placement: Human Development and Family Studies

HDFS 488C Field Placement: Pre-Health

HDFS 488D Field Placement: Prevention/Intervention Science

HDFS 488E Field Placement: Leadership/Entrepreneurship

SOWK 488 Field Placement

Elective Courses

3-6

BMS 300 Principles of Human Physiology

BZ 433 Behavioral Genetics

FSHN 450 Medical Nutrition Therapy

FSHN 451 Community Nutrition

HDFS 332 Death, Dying, and Grief

HDFS 402 Couple and Family Studies

HDFS 403 Families in the Legal Environment

HES 345 Population Health and Disease Prevention

HES 434 Physical Activity Throughout the Lifespan

LIFE 201A Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2)

or LIFE 201B Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)

MU 241 Introduction to Music Therapy

OT 355 The Disability Experience in Society

PHIL 305C Philosophical Issues in the Professions: Caring Professions

PHIL 366 Philosophy of Aging

PSY 296 Group Study

PSY 320 Abnormal Psychology

PSY 452 Cognitive Psychology

PSY 496A Group Study: Applied Social Psychology

or PSY 496B Group Study: Cognitive Psychology

or PSY 496C Group Study: Counseling/Clinical Psychology

or PSY 496D Group Study: Industrial/Organizational Psychology

or PSY 496E Group Study: Perceptual and Brain Sciences

or PSY 496F Group Study: Special Topics in Psychology

SOC 330 Social Stratification

SOWK 371C Social Work with Selected Populations: Adult Offenders

SOWK 371D Social Work with Selected Populations: Substance Abusers

SOWK 410 Social Welfare Policy

Program Total Credits

21-23
Global Environmental Sustainability Interdisciplinary Minor

The School of Global Environmental Sustainability (http://sustainability.colostate.edu/education/minor-global-environmental-sustainability) (SoGES) seeks to prepare students to meet today's pressing environmental challenges. Using an interdisciplinary approach within a framework of sustainability, students will be led in innovative research leading to the knowledge and understanding needed to approach and solve problems of the human-environment interaction. SoGES' vision encompasses laying the foundation and defining the principles and practices that will ensure long-term environmental sustainability, while continuing to meet the needs of people around the earth.

Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<tr>
<td>GES 101</td>
<td>Foundations of Environmental Sustainability</td>
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<td>GES 470</td>
<td>Applications of Environmental Sustainability</td>
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<tr>
<td>Selected Courses</td>
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<tr>
<td>Select one course from each Group A, B, and C. At least 3 credits of these courses must be upper-division (300- to 400-level). Courses may not fulfill two categories.</td>
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<tr>
<td>Group A: Society and Social Processes:</td>
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<tr>
<td>AGRI 116/IE 116</td>
<td>Plants and Civilizations (GT-SS3)</td>
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<tr>
<td>AGRI 330/PHIL 330</td>
<td>Agricultural and Food System Ethics</td>
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<tr>
<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
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<tr>
<td>ANTH 330</td>
<td>Human Ecology</td>
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<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
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</tr>
<tr>
<td>ANTH 453</td>
<td>Impacts on Ancient Environments</td>
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<tr>
<td>ETST 256</td>
<td>Border Crossings: People/Politics/Culture (GT-SS3)</td>
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<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
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<td>GR 320</td>
<td>Cultural Geography</td>
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<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
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<td>HIST 470</td>
<td>World Environmental History, 1500-Present</td>
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<td>HIST 471</td>
<td>History of Antarctica, 1800-Present</td>
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<tr>
<td>HORT 424/SOCR 424</td>
<td>Topics in Organic Agriculture</td>
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<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<td>Group B: Biological and Physical Processes:</td>
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<td>ANTH 453</td>
<td>Impacts on Ancient Environments</td>
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<td>BSPM 308</td>
<td>Ecology and Management of Weeds</td>
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<td>BZ 348/MATH 348</td>
<td>Theory of Population and Evolutionary Ecology</td>
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<tr>
<td>BZ 353/NR 353</td>
<td>Global Change Ecology, Impacts and Mitigation</td>
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<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
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<tr>
<td>ERHS 320</td>
<td>Environmental Health - Water and Food Safety</td>
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<td>ERHS 430</td>
<td>Human Disease and the Environment</td>
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<td>ERHS 448</td>
<td>Environmental Contaminants: Exposure and Fate</td>
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<td>ESS 210/GR 210</td>
<td>Physical Geography</td>
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<tr>
<td>GEOL 122</td>
<td>The Blue Planet: Geology of Our Environment (GT-SC2)</td>
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<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
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<tr>
<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
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<td>GR 410</td>
<td>Climate Change: Science, Policy, Implications</td>
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<td>HORT 171/SOCR 171</td>
<td>Environmental Issues in Agriculture (GT-SS3)</td>
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<td>LAND 220/LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
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<td>LAND 364</td>
<td>Design and Nature</td>
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<td>LAND 444</td>
<td>Ecology of Landscapes</td>
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<td>LIFE 320</td>
<td>Ecology</td>
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<td>NR 120A</td>
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<td>NR 130</td>
<td>Global Environmental Systems (GT-SC2)</td>
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<tr>
<td>RS 351</td>
<td>Wildland Ecosystems in a Changing World</td>
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<td>SOCR 341</td>
<td>Microbiology for Sustainable Agriculture</td>
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<td>SOCR 343</td>
<td>Composting Principles and Practices</td>
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<tr>
<td>SOCR 440</td>
<td>Pedology</td>
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<tr>
<td>Group C: Economy and Profitability:</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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</table>
**Effective Fall 2015**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

**Effective Spring 2017**

Computer Application Requirement - Before a student is admitted to this program the student must demonstrate mastery of the following skill:

- Computer applications software - demonstrated by completion of BUS 150 or CS 110.

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<td>Select one of the following courses:</td>
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<tr>
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<td>JTC 413 New Communication Technologies and Society</td>
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<tr>
<td></td>
<td>JTC 416 Global Communication Technologies</td>
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<td>Elective Courses</td>
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<td>Select from the following courses:</td>
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<td>CIS 210 Information Technology in Business</td>
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<td></td>
<td>CIS 240 Application Design and Development</td>
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<td></td>
<td>CIS 301 End User Computing</td>
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<td>CIS 340 Advanced Application Design and Development</td>
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<td>CIS 355 Business Database Systems</td>
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<td>CIS 410 Web Application Development</td>
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<td></td>
<td>CO 402 Principles of Digital Rhetoric and Design</td>
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<td>CS 150 Interactive Programming with Java</td>
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<td>CS 161 Object-Oriented Problem Solving</td>
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<td>CS 163 Java (CS1) No Prior Programming or CS 164</td>
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<td>Java (CS1) Prior Programming</td>
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<td>CT 310 Web Development</td>
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<td>CT 320 Network and System Administration</td>
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<td>JTC 300 Professional and Technical Communication</td>
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<td>(GT-CO3)</td>
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<td>JTC 335 Digital Photography</td>
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<td>JTC 372 Web Design and Management</td>
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<td></td>
<td>JTC 417 Information Graphics</td>
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</table>

**Information Science and Technology Interdisciplinary Minor**

Office in Clark Building, Room C205
istec.colostate.edu/activities/education (http://istec.colostate.edu/activities/education)

Professor Peter B. Seel, Coordinator

This interdisciplinary minor is sponsored by three departments in different colleges across CSU: Computer Information Systems, Computer Science, and Journalism and Media Communication. The program is designed for students seeking a broad foundation in information technology, but not seeking to major in a specific information technology-related field. The program requires 21 credits and is open to students majoring in any field other than computer science, computer information systems, and electrical and computer engineering.

1 Nine credits must be from upper-division courses.

**Integrated Resource Management Interdisciplinary Minor**

Office in University Square, Room 202
wcirm.agsci.colostate.edu (http://wcirm.agsci.colostate.edu)

Kraig Peel, Director

The Integrated Resource Management interdisciplinary minor offers students from all majors an opportunity for additional specialized course work for training in integrated resource management. The core curriculum consists of courses in the Department of Agricultural and
Resource Economics, Animal Sciences, Rangeland Ecology, and Soil and Crop Sciences. The core curriculum is supplemented with several courses focused on integration of the information provided in the disciplinary courses and developing skills in systems analysis. This interdisciplinary program is aimed at providing training for students interested in careers involving the businesses associated with land and animal management.

Effective Spring 2015
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Effective Fall 2016
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
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<tr>
<td>LAND 220/ LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
<td>3-4</td>
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<tr>
<td>or SOCR 320</td>
<td>Forage and Pasture Management</td>
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<tr>
<td>AGRI 383/NR 383 U.S. Travel-Integrated Resource Management</td>
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<tr>
<td>ANEQ 300E</td>
<td>Topics in Animal Sciences: Family Ranching</td>
<td>1</td>
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<tr>
<td>ANEQ 472</td>
<td>Sheep Systems</td>
<td>3</td>
</tr>
<tr>
<td>or ANEQ 478</td>
<td>Beef Systems</td>
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<tr>
<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
<td>3</td>
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<tr>
<td>AREC 310</td>
<td>Agricultural Marketing</td>
<td>3</td>
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<tr>
<td>AREC 478</td>
<td>Agricultural Policy</td>
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<tr>
<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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<tr>
<td>SOC 341</td>
<td>Sociology of Rural Life</td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
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<td>27-28</td>
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</tbody>
</table>

International Development Interdisciplinary Minor

Effective Spring 2015
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Effective Fall 2016
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<tr>
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<tr>
<td>LAND 220/ LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
<td>3-4</td>
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<tr>
<td>or SOCR 320</td>
<td>Forage and Pasture Management</td>
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<tr>
<td>AGRI 383/NR 383 U.S. Travel-Integrated Resource Management</td>
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<tr>
<td>ANEQ 300E</td>
<td>Topics in Animal Sciences: Family Ranching</td>
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<tr>
<td>ANEQ 472</td>
<td>Sheep Systems</td>
<td>3</td>
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<tr>
<td>or ANEQ 478</td>
<td>Beef Systems</td>
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<tr>
<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
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<td>Agricultural Marketing</td>
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<tr>
<td>AREC 478</td>
<td>Agricultural Policy</td>
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<tr>
<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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<td>Total Credits</td>
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</table>

International Development Interdisciplinary Minor

Office in Laurel Hall
(970) 491-5917
international-initiatives.colostate.edu/academic_programs/ (http://international-initiatives.colostate.edu/academic_programs)

Coordinated by the International Development Studies Board and the Office of International Programs

The International Development Studies Interdisciplinary Undergraduate Minor is a 21-credit program that introduces students to international development through a variety of approaches and practices. Coursework is designed to facilitate critical thinking about issues such as poverty, ethics, and global interdependence. A required common course provides a foundation for theories, applications, and the impacts of development. Electives provide a multidisciplinary approach to learning.
<table>
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<tr>
<td>FIN 475</td>
<td>International Business Finance</td>
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<td>Cultural Geography</td>
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<td>IE 472</td>
<td>Education for Global Peace</td>
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<td>INST 300</td>
<td>Approaches to International Studies</td>
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<td>JTC 412</td>
<td>International Mass Communication</td>
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<td>L*** Foreign languages 2</td>
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<tr>
<td>LFRE 433A</td>
<td>Advanced French/Francophone Culture: Representations 3</td>
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<tr>
<td>or LFRE 433B</td>
<td>Advanced French/Francophone Culture: Center and Margins</td>
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<tr>
<td>MGT 475</td>
<td>International Business Management</td>
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<tr>
<td>MKT 365</td>
<td>International Marketing</td>
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<tr>
<td>NRRT 320</td>
<td>International Issues-Recreation and Tourism</td>
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<tr>
<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
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<td>PHIL 345</td>
<td>Environmental Ethics</td>
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<tr>
<td>POLS 331</td>
<td>Politics and Society Along Mexican Border</td>
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<td>POLS 362</td>
<td>Global Environmental Politics</td>
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<td>POLS 431</td>
<td>International Law</td>
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<td>POLS 433</td>
<td>International Organization</td>
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<td>POLS 442</td>
<td>Environmental Politics in Developing World</td>
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<td>POLS 443</td>
<td>Comparative Social Movements</td>
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<td>POLS 444</td>
<td>Comparative African Politics</td>
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<td>POLS 445</td>
<td>Comparative Asian Politics</td>
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<td>POLS 446</td>
<td>Politics of South America</td>
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<td>POLS 447</td>
<td>Politics in Mexico, Central America, Caribbean</td>
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<td>POLS 449</td>
<td>Middle East Politics</td>
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<td>PSY 327</td>
<td>Psychology of Women</td>
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<td>SOC 320</td>
<td>Population-Natural Resources and Environment</td>
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<td>SOC 341</td>
<td>Sociology of Rural Life</td>
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<tr>
<td>SOC 364</td>
<td>Agriculture and Global Society</td>
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<tr>
<td>SOC 366</td>
<td>Peoples and Institutions of Latin America</td>
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<td>SOC 429</td>
<td>Comparative Urban Studies</td>
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<td>SOC 460</td>
<td>Society and Environment</td>
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<td>SOC 461</td>
<td>Water, Society, and Environment</td>
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<td>SOC 474</td>
<td>Social Movements and Collective Behavior</td>
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<tr>
<td>SOCR 475</td>
<td>Global Challenges in Plant and Soil Science</td>
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<td>SOWK 450/</td>
<td>International Social Welfare and Development</td>
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<td>IE 450</td>
<td>Development</td>
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<td>SPCM 434</td>
<td>Intercultural Communication</td>
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<td>Internship</td>
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### Supporting Courses Group B

Select at least 3 credits from the following courses, OR from Core Courses or Supporting Courses Group A not previously taken, OR from additional courses approved by the International Development Board and advisor:

- IE 116/ Plants and Civilizations (GT-SS3)
- AGRI 116
- L*** Foreign Languages 4
- POLS 131 Current World Problems (GT-SS1)
- POLS 241 Comparative Government and Politics (GT-SS1)

### International Development Interdisciplinary Studies Program

This 12-credit graduate program exposes students to a variety of approaches and practices to international development. Students take a common course to learn theories, applications, and impacts of development. Electives challenge students to examine development practices from multiple disciplinary viewpoints encouraging perspective-taking and enhancing critical thinking skills. The International Development Studies Interdisciplinary program is open to graduate students from all colleges and departments.

Additional coursework may be required due to prerequisites.

### Effective Fall 2016

#### Core Courses

- IE 679/ANTH 679 Applications of International Development 3
- Select one course from the following: 3
  - ANTH 529 Anthropology and Sustainable Development
  - AREC 566/ SOC 566 Contemporary Issues in Developing Countries
  - AREC 660 Development of Rural Resource-Based Economies
  - CIVE 525 Water Engineering: International Development

- IE 470 Women and Development
- IE 471 Children and Youth in Global Context
- IE 517/ PSY 517 Perspectives in Global Health
- IE 550/ PHIL 550 Ethics and International Development
- NR 525 World Natural Resources
- POLS 541 Political Economy of Change and Development
### Supporting Courses

Students will take at least six credits from Supporting Courses or additional courses approved by the International Development Board. Core courses not taken to meet the three-credit core requirement can be used as supportive coursework.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM 500</td>
<td>Apparel Supply Chains/Social Responsibility</td>
</tr>
<tr>
<td>ANTH 414/ETST 414</td>
<td>Development in Indian Country</td>
</tr>
<tr>
<td>ANTH 515</td>
<td>Culture and Environment</td>
</tr>
<tr>
<td>ANTH 520</td>
<td>Women, Health, and Culture</td>
</tr>
<tr>
<td>ANTH 535</td>
<td>Globalization and Culture Change</td>
</tr>
<tr>
<td>ANTH 540</td>
<td>Medical Anthropology</td>
</tr>
<tr>
<td>ANTH 571</td>
<td>Anthropology and Global Health</td>
</tr>
<tr>
<td>AREC 415</td>
<td>International Agricultural Trade</td>
</tr>
<tr>
<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
</tr>
<tr>
<td>AREC 660</td>
<td>Development of Rural Resource-Based Economies</td>
</tr>
<tr>
<td>AREC 792B</td>
<td>Seminar: International</td>
</tr>
<tr>
<td>BUS 662</td>
<td>International Business</td>
</tr>
<tr>
<td>CIVE 512</td>
<td>Irrigation Systems Design</td>
</tr>
<tr>
<td>CIVE 516</td>
<td>Water Control and Measurement</td>
</tr>
<tr>
<td>CIVE 532</td>
<td>Wells and Pumps</td>
</tr>
<tr>
<td>CIVE 544</td>
<td>Water Resources Planning and Management</td>
</tr>
<tr>
<td>CIVE 575</td>
<td>Sustainable Water and Waste Management</td>
</tr>
<tr>
<td>CIVE 578</td>
<td>Infrastructure and Utility Management</td>
</tr>
<tr>
<td>DM 518</td>
<td>Consumer Issues-Global Perspectives</td>
</tr>
<tr>
<td>E 526</td>
<td>Teaching English as a Foreign/Second Language</td>
</tr>
<tr>
<td>E 527</td>
<td>Theories of Foreign/Second Language Learning</td>
</tr>
<tr>
<td>ECON 440</td>
<td>Economics of International Trade and Policy</td>
</tr>
<tr>
<td>ECON 442</td>
<td>Economics of International Finance and Policy</td>
</tr>
<tr>
<td>ECON 460</td>
<td>Economic Development</td>
</tr>
<tr>
<td>ECON 640</td>
<td>International Trade Theory</td>
</tr>
<tr>
<td>ECON 742</td>
<td>International Production and Monetary Theory</td>
</tr>
<tr>
<td>ECON 760</td>
<td>Theories of Economic Development</td>
</tr>
<tr>
<td>EDOD 767</td>
<td>Cross-Culture and International Training</td>
</tr>
<tr>
<td>FIN 675</td>
<td>International Finance</td>
</tr>
<tr>
<td>FSHN 661</td>
<td>International Nutrition</td>
</tr>
<tr>
<td>FW 573</td>
<td>Travel Abroad-Wildlife Ecology/Conservation</td>
</tr>
<tr>
<td>IE 471</td>
<td>Children and Youth in Global Context</td>
</tr>
<tr>
<td>JTC 412</td>
<td>International Mass Communication</td>
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<tr>
<td>L*** Upper-division foreign language</td>
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<tr>
<td>LFRE 433A</td>
<td>Advanced French/Francophone Culture: Representations</td>
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<tr>
<td>or LFRE 433A</td>
<td>Advanced French/Francophone Culture: Center and Margins</td>
</tr>
<tr>
<td>MGT 475</td>
<td>International Business Management</td>
</tr>
<tr>
<td>MKT 365</td>
<td>International Marketing</td>
</tr>
<tr>
<td>NRRT 550</td>
<td>Ecotourism</td>
</tr>
<tr>
<td>POLS 433</td>
<td>International Organization</td>
</tr>
<tr>
<td>POLS 444</td>
<td>Comparative African Politics</td>
</tr>
<tr>
<td>POLS 445</td>
<td>Comparative Asian Politics</td>
</tr>
<tr>
<td>POLS 446</td>
<td>Politics of South America</td>
</tr>
<tr>
<td>POLS 447</td>
<td>Politics in Mexico, Central America, Caribbean</td>
</tr>
<tr>
<td>POLS 531</td>
<td>International Security Studies</td>
</tr>
<tr>
<td>POLS 540</td>
<td>Comparative Politics</td>
</tr>
<tr>
<td>POLS 670</td>
<td>Politics of Environment and Sustainability</td>
</tr>
<tr>
<td>POLS 739</td>
<td>International Environmental Politics</td>
</tr>
<tr>
<td>POLS 749</td>
<td>Comparative Environmental Politics</td>
</tr>
<tr>
<td>RS 531</td>
<td>World Grassland Ecogeography</td>
</tr>
<tr>
<td>SOC 631</td>
<td>Sociology of Rural Development</td>
</tr>
<tr>
<td>SOC 660</td>
<td>Theories of Development and Social Change</td>
</tr>
<tr>
<td>SOC 661</td>
<td>Gender and Global Society</td>
</tr>
<tr>
<td>SOC 663</td>
<td>Sociology of Sustainable Development</td>
</tr>
<tr>
<td>SOC 666</td>
<td>Globalization and Socioeconomic Restructuring</td>
</tr>
<tr>
<td>SOC 667</td>
<td>Theories of State, Economy, and Society</td>
</tr>
<tr>
<td>SOC 669</td>
<td>Global Inequality and Change</td>
</tr>
<tr>
<td>SOCR 475</td>
<td>Global Challenges in Plant and Soil Science</td>
</tr>
<tr>
<td>SPCM 634</td>
<td>Communication and Cultural Diversity</td>
</tr>
<tr>
<td>WR 510</td>
<td>Watershed Management in Developing Countries</td>
</tr>
</tbody>
</table>

### Additional Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Development Events</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Credits 12

A minimum of 12 credits are required to complete this program. A minimum of 9 credits must be at 500-level or above.

1. Accepted only when designated "Des Questions de development a travers le cinema africain."

2. Students are required to participate in two on-campus events focused on international development, as approved by advisor.

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**Italian Studies Interdisciplinary Minor**

Office in Andrew G. Clark Building, Room C104  
languages.colostate.edu/languages/italian (http://languages.colostate.edu/home/undergraduate-program)

Coordinated by the Department of Languages, Literatures and Cultures

The Italian Studies interdisciplinary minor is designed to give students a comprehensive knowledge of different aspects of Italian language, culture, history, and artistic expressions, according to the students’ interests. Credits from study abroad programs will be properly evaluated as part of the overall program.
Effective Spring 2015
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A grade of C or better is required in each course that will count toward the interdisciplinary minor.

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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Language Courses</strong> ³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Students must complete LITA 200 and LITA 201 and at least an additional 3 credits, for a minimum total of 9 credits.</td>
<td></td>
</tr>
<tr>
<td>LITA 200</td>
<td>Second-Year Italian I (GT–AH4)</td>
<td>3</td>
</tr>
<tr>
<td>LITA 201</td>
<td>Second-Year Italian II (GT–AH4)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Choose an additional three credits from the courses below:</td>
<td>3</td>
</tr>
<tr>
<td>LITA 107</td>
<td>First-Year Italian II</td>
<td></td>
</tr>
<tr>
<td>LITA 296</td>
<td>Group Study-Italian</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Upper-Division Electives</strong> ³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Students must select a minimum of four courses from at least three different subject codes for a minimum total of 12 credits from the following:</td>
<td>12</td>
</tr>
<tr>
<td>ART 412</td>
<td>History of Renaissance Art</td>
<td></td>
</tr>
<tr>
<td>ART 417</td>
<td>Roman Art</td>
<td></td>
</tr>
<tr>
<td>ART 420</td>
<td>Travel Abroad-Art History in Italy</td>
<td></td>
</tr>
<tr>
<td>E 452</td>
<td>Masterpieces of European Literature</td>
<td></td>
</tr>
<tr>
<td>HIST 301</td>
<td>Roman Republic</td>
<td></td>
</tr>
<tr>
<td>HIST 302</td>
<td>Roman Empire</td>
<td></td>
</tr>
<tr>
<td>HIST 304</td>
<td>Women in Ancient Greece and Rome</td>
<td></td>
</tr>
<tr>
<td>HIST 308</td>
<td>Ancient Christianity to 500 A.D.</td>
<td></td>
</tr>
<tr>
<td>HIST 309</td>
<td>Medieval Christianity, 500-1500</td>
<td></td>
</tr>
<tr>
<td>HIST 310</td>
<td>Medieval Europe</td>
<td></td>
</tr>
<tr>
<td>HIST 312</td>
<td>Women in Medieval Europe</td>
<td></td>
</tr>
<tr>
<td>HIST 317</td>
<td>Renaissance and Reformation Europe</td>
<td></td>
</tr>
<tr>
<td>HIST 320</td>
<td>Women and Gender in Europe, 1450-1789</td>
<td></td>
</tr>
<tr>
<td>HIST 328</td>
<td>Modern Europe, 1815-1914</td>
<td></td>
</tr>
<tr>
<td>HIST 329</td>
<td>Europe in Crisis, 1914-1941</td>
<td></td>
</tr>
<tr>
<td>HIST 333</td>
<td>Contemporary Europe</td>
<td></td>
</tr>
<tr>
<td>HIST 334</td>
<td>European Culture in the 20th Century</td>
<td></td>
</tr>
<tr>
<td>HIST 339</td>
<td>World War II in Europe</td>
<td></td>
</tr>
<tr>
<td>LITA 365</td>
<td>Studies in Foreign Film-Italian</td>
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</tr>
<tr>
<td>MU 334</td>
<td>Music History I</td>
<td></td>
</tr>
<tr>
<td>MU 335</td>
<td>Music History II</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td>21</td>
</tr>
</tbody>
</table>

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1. A total of nine credits in Italian language courses may be counted toward the core language requirement. Students must complete Italian language courses or test out through the level of LITA 201 for the interdisciplinary minor. Students testing out or placing at a level higher than LITA 201 should see the minor advisor and department chair to fulfill all 21 credits needed for the minor.

2. Students may select this course with permission of advisor and department chair.

3. Students may petition to include up to 12 credits of upper-division (300- to 400-level) coursework from outside the courses listed here. To count towards the completion of the Interdisciplinary Minor in Italian Studies, 30 percent or more of the class content should focus on Italy. Students must submit a syllabus to the Department of Languages, Literatures and Cultures for each proposed class. If students have already completed the course, they must include a brief description of individual work completed in addition to the syllabus.

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Latin American and Caribbean Studies Interdisciplinary Minor

For more information, contact the Political Science Department:
Marcela Velasco
Clark, Room C336
(970) 491-5942

The Latin American and Caribbean Studies Interdisciplinary Minor seeks to broaden understanding of the languages, cultures, institutions, political and economic systems, and the processes of change in Latin America. The program offers courses in a wide variety of disciplines, enabling students to gain a broader and deeper appreciation of the diverse regions of Latin America and the Caribbean. This background prepares students for specialized graduate study focusing on the region and for careers in a variety of areas.

Effective Spring 2015
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Language Courses</strong> ¹</td>
<td></td>
</tr>
<tr>
<td>L***</td>
<td>French or Spanish language</td>
<td>6-10</td>
</tr>
<tr>
<td></td>
<td><strong>Area Courses</strong> ²</td>
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<tr>
<td></td>
<td>Select 15-20 credits from the following:</td>
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</tr>
<tr>
<td>ANTH 319</td>
<td>Latin American Peasantries</td>
<td></td>
</tr>
<tr>
<td>ANTH 446</td>
<td>New Orleans and the Caribbean</td>
<td></td>
</tr>
<tr>
<td>ANTH 451</td>
<td>Andean Archaeology and Ethnology</td>
<td></td>
</tr>
<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td></td>
</tr>
<tr>
<td>ETST 370</td>
<td>Caribbean Identities</td>
<td></td>
</tr>
<tr>
<td>ETST 371</td>
<td>The Modern Caribbean</td>
<td></td>
</tr>
<tr>
<td>HIST 353</td>
<td>U.S.-Mexico Borderlands</td>
<td></td>
</tr>
<tr>
<td>HIST 410</td>
<td>Colonial Latin America</td>
<td></td>
</tr>
<tr>
<td>HIST 411</td>
<td>Latin America Since Independence</td>
<td></td>
</tr>
<tr>
<td>HIST 412</td>
<td>Mexico</td>
<td></td>
</tr>
<tr>
<td>HIST 414</td>
<td>Revolutions in Latin America</td>
<td></td>
</tr>
<tr>
<td>HIST 460</td>
<td>Slavery in the Americas</td>
<td></td>
</tr>
<tr>
<td>JTC 412</td>
<td>International Mass Communication</td>
<td></td>
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<tr>
<td>LGEN 465A</td>
<td>Studies in Foreign Film: The Americas</td>
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</tr>
<tr>
<td>LSPA 335</td>
<td>Issues in Hispanic Culture</td>
<td></td>
</tr>
<tr>
<td>LSPA 435</td>
<td>Caribbean Culture in Hispanic Literature</td>
<td></td>
</tr>
<tr>
<td>LSPA 436</td>
<td>Advanced Latin American Culture</td>
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</tr>
<tr>
<td>LSPA 445</td>
<td>Women Writers in the Hispanic World</td>
<td></td>
</tr>
</tbody>
</table>

---

1. A total of nine credits in Italian language courses may be counted toward the core language requirement. Students must complete Italian language courses or test out through the level of LITA 201 for the interdisciplinary minor. Students testing out or placing at a level higher than LITA 201 should see the minor advisor and department chair to fulfill all 21 credits needed for the minor.

2. Students may select this course with permission of advisor and department chair.
The Leadership Studies Interdisciplinary Minor prepares students to serve more effectively in formal and informal leadership roles in campus, local, national, and global contexts. The program offers courses to prepare students to advance in diverse and innovative studies of leadership by building on existing theoretical, empirical, and experiential knowledge. The program provides a structure for students to explore pressing social issues and challenge them to become part of the solution as civically-minded leaders within their communities and professions. As a result, both experiences in, and commitments to, civic engagement, and multicultural competence are required. The interdisciplinary minor refines and expands studies done in the President’s Leadership Program to create a shared understanding of leadership which then expands to academic disciplines through upper-division capstone coursework and integration with the student’s discipline.

---

**Effective Fall 2013**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

The Leadership Studies Interdisciplinary Minor requires admission to the President's Leadership Program.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Division</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IU 170</td>
<td>A Call to Lead I: Theories and Skills</td>
<td>2</td>
</tr>
<tr>
<td>IU 171</td>
<td>A Call to Lead II: Social Change Model</td>
<td>2</td>
</tr>
<tr>
<td>IU 270</td>
<td>Leadership Styles I: Personal Application</td>
<td>2</td>
</tr>
<tr>
<td>IU 271</td>
<td>Leadership Styles II: Prominent Leaders</td>
<td>2</td>
</tr>
<tr>
<td>Upper Division</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IU 470</td>
<td>Effective Leadership I: Success as a Leader</td>
<td>3</td>
</tr>
<tr>
<td>IU 471</td>
<td>Effective Leadership II: Vision and Change</td>
<td>3</td>
</tr>
<tr>
<td>Select a minimum of 4 credits from the following:</td>
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<td></td>
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<tr>
<td>IU 486</td>
<td>Practicum for Interdisciplinary Leadership</td>
<td>4</td>
</tr>
<tr>
<td>IU 487</td>
<td>Internship for Interdisciplinary Leadership</td>
<td></td>
</tr>
<tr>
<td>IU 498</td>
<td>Research for Interdisciplinary Leadership</td>
<td>3</td>
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<tr>
<td>AUCC category 4C Requirement ^2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits**

21

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1. At least two courses (6-10 credits) are required in Spanish or French. Because language proficiency is required for effective research or work in this region, students are STRONGLY URGED to complete language coursework through the 300-level or above. Language courses may be taken at CSU or transferred from an accredited institution. Independent study courses may not count toward the language requirement.

2. Senior capstone courses having a focus on Latin America or the Caribbean may be used to fulfill program requirements with approval of advisor.

3. For high-achieving students, LSPA 549 may be used as area course with approval of advisor.

4. This course may be used only when a Latin American or Caribbean author is the focus.

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**Leadership Studies Interdisciplinary Minor**

SLICE Office/President’s Leadership Program
(970) 491-1682
plp.colostate.edu (http://plp.colostate.edu)

Coordinated by the President’s Leadership Program and Student Leadership, Involvement, and Community Engagement

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**Legal Studies Interdisciplinary Minor**

College of Liberal Arts Deans Office, Clark Building, Room C138
(970) 491-5421

The Legal Studies interdisciplinary minor provides a broad-based academic foundation for students interested in legal or law-related fields. This minor is intended for students who plan to attend law school, as well as to those who are interested in a wide range of careers in which some grounding in legal studies is helpful, such as media, business, human resources, communications, government service, and others.

---

**Effective Fall 2014**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LB 205</td>
<td>Contemporary Legal Studies</td>
<td>3</td>
</tr>
</tbody>
</table>

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1. Students may substitute courses from their major department that meets the course objectives (e.g., XXX 486, XXX 487, or XXX 498) with PLP advisor’s approval. Students may take up to two consecutive semesters to complete the credits.

2. Students must complete a minimum of 3 credits of AUCC category 4C in order to achieve the 21 credit requirement of the interdisciplinary minor. If the major does not have a 4C course that is 3 credits (either as a stand-alone 4C course or as a 4C course in combination with a 4A and/or 4B course), students should take a 4A or 4B course in their major with PLP advisor approval.
Select one from the following courses:

- **ECON 212** Racial Inequality and Discrimination (GT-SS1)
- **ETST 312**
- **ETST 332** Contemporary Chicana/o Issues
- **ETST 404** Race Formation in the United States
- **ETST 405** Ethnicity, Class, and Gender in the U.S.
- **SOC 205** Contemporary Race-Ethnic Relations (GT-SS3)
- **SOC 333** Gender and Society

Select one from the following courses:

- **PHIL 110** Logic and Critical Thinking (GT-AH3)
- **PHIL 210** Introduction to Formal Logic
- **SPCM 200** Public Speaking

**Selected Courses**

Select a minimum of 12 credits from at least two of the following categories:

**Constitution:**
- **JTC 415** Communications Law
- **POLS 410** American Constitutional Law
- **POLS 413** U.S. Civil Rights and Liberties
- **SPCM 349** Freedom of Speech

**Economics/Business:**
- **BUS 205** Legal and Ethical Issues in Business
- **ECON 327** Law and Economics
- **MGT 350** Employment Relations: The Legal Environment
- **REL 367** Real Estate Law

**Environment/Natural Resources:**
- **AGRI 330/PHIL 330** Agricultural and Food System Ethics
- **or PHIL 345** Environmental Ethics
- **AREC 342** Water Law, Policy, and Institutions
- **AREC 375** Agricultural Law

**Social/Political/International:**
- **ANTH 422/SOC 422** Comparative Legal Systems
- **ETST 324** Asian-Pacific Americans and the Law
- **ETST 444/SOC 444** Federal Indian Law and Policy
- **HDFS 403** Families in the Legal Environment
- **PHIL 312** Philosophy of Law
- **POLS 431** International Law
- **SOC 455** Sociology of Law

**Total Credits**

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**Linguistics and Culture Interdisciplinary Minor**

Office in 359 Willard O. Eddy Hall

anthropology.colostate.edu/interdisciplinary-minor/ (http://anthropology.colostate.edu)

english.colostate.edu/undergraduate/english-related-minors/ (http://english.colostate.edu/undergraduate/english-related-minors)

The Linguistics and Culture interdisciplinary minor is designed for students with a particular interest in language and its cultural interfaces. Its core is a pair of linguistics and anthropological linguistics courses, which are supported by courses in specific languages, and supplemented by elective courses in English; Languages, Literatures, and Cultures; Philosophy; and Communication Studies. Courses address current and historical descriptive, theoretical, and pedagogical issues in linguistics, cultural anthropology, philosophy of language, non-verbal communication, and the relation between communication, language and thought, providing students with a well-rounded program of study. The program is open to all students and designed to be an addition to the student’s major. CSU has linguistic and cultural expertise and this program provides undergraduate students with an opportunity to broaden their education as they prepare themselves for graduate study or careers requiring an analytic understanding of the nature of language and its relations with thought and culture.

**Effective Fall 2012**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANTH 335</td>
<td>Language and Culture</td>
<td>3</td>
</tr>
<tr>
<td>E 320</td>
<td>Introduction to the Study of Language</td>
<td>3</td>
</tr>
<tr>
<td>Select two courses from one of the Core Courses Groups:</td>
<td>6-10</td>
<td></td>
</tr>
<tr>
<td><strong>Group A:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LARA 105</td>
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Linguistics and Culture Interdisciplinary Minor

Office in 359 Willard O. Eddy Hall

anthropology.colostate.edu/interdisciplinary-minor/ (http://anthropology.colostate.edu)
## Master of Science in Bioengineering

Intra-University in Colleges of Health and Human Sciences, Engineering, Natural Sciences, Veterinary Medicine & Biomedical Sciences

### Effective Fall 2007

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<td>Methods in Cell and Molecular Biology: Mammalian Cell Culture Techniques</td>
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<td>CM 702C</td>
<td>Methods in Cell and Molecular Biology: Immunochemical Techniques</td>
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<td>CM 702D</td>
<td>Methods in Cell and Molecular Biology: Radiation Cytogenetics</td>
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<td>Methods in Cell and Molecular Biology: Flow Cytometry and Cell Sorting</td>
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<td>BIOM 570/</td>
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<td>STAT 512</td>
<td>Design and Data Analysis for Researchers II</td>
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### Specific requirements for the M.S. in Bioengineering

- Minimum of 30 semester credits of graduate work in approved course of study.
- Minimum of 24 semester credits earned at CSU (21 while in the graduate program).
- Minimum of 21 semester credits earned at CSU (not including thesis or independent study credits) in 500-level (or above) regular courses. The preceding list of core courses must be satisfied (15 credits). In addition, at least one life science course (500-level or above) and one engineering course (500-level or above) must be taken (6 credits minimum).
- Thesis credits (a minimum of 6 and a maximum of 12 credits).
- Final thesis defense.

## Master of Science in Ecology, Human-Environment Interaction Specialization

### Effective Spring 2009

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<td>ECOL 693</td>
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### Ecology Courses

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<tbody>
<tr>
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Group A: Organism/Population (Select a minimum 3 credits)

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Group A: Organism/Population (Select a minimum 3 credits)

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Supporting Courses

### Group E:

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### Group F:

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<td>LJPN 107</td>
<td>First-Year Japanese II</td>
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### Group G:

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<td>LKOR 107</td>
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### Group H:

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<td>LLAT 105</td>
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### Group I:

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### Group K:

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### Supporting Courses

Select 3 courses from the following:

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<tr>
<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
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<td>E 324</td>
<td>Teaching English as a Second Language</td>
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<td>E 326</td>
<td>Development of the English Language</td>
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<tr>
<td>E 327</td>
<td>Syntax and Semantics</td>
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<tr>
<td>E 328</td>
<td>Phonology, Morphology, and Lexis</td>
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<td>E 329</td>
<td>Pragmatics and Discourse Analysis</td>
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<td>LFRE 312</td>
<td>Introduction to French Linguistics</td>
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<td>LFRE 326</td>
<td>French Phonetics</td>
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<td>LGER 326</td>
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<td>LSPA 312</td>
<td>Introduction to Spanish Linguistics</td>
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<td>LSPA 326</td>
<td>Spanish Phonetics</td>
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<td>PHIL 210</td>
<td>Introduction to Formal Logic</td>
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<td>PHIL 315</td>
<td>Philosophy of Language</td>
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<td>SPCM 431</td>
<td>Communication, Language, and Thought</td>
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**Total Credits**: 21-25
BSPM 570  Chemical Ecology  
BZ 526/  Evolutionary Ecology  
BSPM 526  
BZ 530  Ecological Plant Morphology  
BZ 535  Behavioral Ecology  
BZ 548  Theory of Population and Evolutionary Ecology  
BZ 555  Reproductive Biology of Higher Plants  
BZ 578/  Genetics of Natural Populations  
MIP 578  
ECOL 600  Community Ecology  
FW 544  Ecotoxicology  
FW 662  Wildlife Population Dynamics  

Group B: Community/Ecosystem (Select a minimum 3 credits)  
ANTH 515  Culture and Environment  
ANTH 530  Human-Environment Interactions  
ANTH 545  Global Mental Health--Theory and Method  
ANTH 555  Paleoindian Archaeology  
ANTH 571  Anthropology and Global Health  
ATS 760  Global Carbon Cycle  
BZ 561  Landscape Ecology  
ECOL 600  Community Ecology  
ECOL 610  Ecosystem Ecology  
ECOL 620  Applications in Landscape Ecology  
ESS 660  Biogeochemical Cycling in Ecosystems  
F 624  Fire Ecology  
FW 540  Fisheries Ecology  
FW 555  Conservation Biology  
NR 578  Ecology of Disturbed Lands  
RS 630  Ecology of Grasslands and Shrublands  

Group C: Quantitative/Qualitative Tools (Select a minimum 6 credits)  
BZ 548  Theory of Population and Evolutionary Ecology  
ESS 575  Models for Ecological Data  
FW 663  Sampling and Analysis of Vertebrate Populations  
NR 523/  Quantitative Spatial Analysis  
STAT 523  
NRRT 665  Survey Research and Analysis  
NRRT 765  Applied Multivariate Analysis  
POLS 621  Qualitative Methods in Political Science  
SOC 610  Seminar in Methods of Qualitative Analysis  
STAT 511  Design and Data Analysis for Researchers I  
STAT 512  Design and Data Analysis for Researchers II  
STAT 544/  Biostatistical Methods for Quantitative Data  
ERHS 544  

Electives, Independent Study, and Research  

Total Credits  

A minimum of 30 credits are required to complete this program.

The distribution lists contain suggestions for appropriate courses and are not complete lists. Other courses that fit within these categories may be taken to satisfy the credit requirement. This approach ensures that all students have a fundamental background in ecology while also permitting them to tailor a program to their interests. No specific distribution of ecology courses beyond the required courses is expected by GDPE; the appropriate course work is determined by the student, advisor, and committee.

ECOL 600 can be used to meet either Group A or Group B requirements, but not both.

3 of the 6 credits must be in a qualitative methods course (Group C, either POLS 621 or SOC 610).

Select from a combination of elective courses, ECOL 695, ECOL 698, and ECOL 699 with approval of advisor and committee.

Master of Science in Ecology, Plan A

Natural Resources Building, Rooms 237, 238  
ecology.colostate.edu (http://ecology.colostate.edu)

N. LeRoy Poff, Director

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Effective Fall 2016

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ECOLOGY FUNDAMENTALS
Select 6 credits not taken elsewhere in the program from the following:

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<td>BZ 535</td>
<td>Behavioral Ecology</td>
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<td>BZ 548</td>
<td>Theory of Population and Evolutionary Ecology</td>
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<tr>
<td>BZ 578/MIP 578</td>
<td>Genetics of Natural Populations</td>
</tr>
<tr>
<td>ECOL 600</td>
<td>Community Ecology</td>
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<tr>
<td>ECOL 610</td>
<td>Ecosystem Ecology</td>
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<tr>
<td>ECOL 620</td>
<td>Applications in Landscape Ecology</td>
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<tr>
<td>ESS 575</td>
<td>Models for Ecological Data</td>
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<td>ESS 660</td>
<td>Biogeochemical Cycling in Ecosystems</td>
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<td>FW 662</td>
<td>Wildlife Population Dynamics</td>
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<td>HORT 576</td>
<td>Advanced Environmental Plant Stress Physiology</td>
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**ECOLOGY TOOLS**

Select 3 credits not taken elsewhere in the program from the following:

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<td>Applied Econometrics</td>
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<td>AREC 635/ECON 635</td>
<td>Econometric Theory I</td>
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<td>AREC 735/ECON 735</td>
<td>Econometric Theory II</td>
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<td>BZ 577/MIP 577</td>
<td>Computer Analysis in Population Genetics</td>
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<td>CIVE 524/WR 524</td>
<td>Modeling Watershed Hydrology</td>
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<td>ERHS 544/STAT 544</td>
<td>Biostatistical Methods for Quantitative Data</td>
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<td>Models for Ecological Data</td>
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<td>FW 551</td>
<td>Design of Fish and Wildlife Studies</td>
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<td>FW 552</td>
<td>Applied Sampling for Wildlife/Fish Studies</td>
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<td>FW 663</td>
<td>Sampling and Analysis of Vertebrate Populations</td>
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<td>GR 503/NR 503</td>
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<td>Mathematics for Scientists and Engineers</td>
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<td>MATH 540</td>
<td>Dynamical Systems</td>
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<td>NR 505</td>
<td>Concepts in GIS</td>
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<td>GIS Methods for Resource Management</td>
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<td>Spatial Statistical Modeling-Natural Resources</td>
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<td>NR 523/STAT 523</td>
<td>Quantitative Spatial Analysis</td>
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<td>NR 554/ANTH 554</td>
<td>Ecological and Social Agent-based Modeling</td>
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<td>SOCR 620</td>
<td>Modeling Ecosystem Biogeochemistry</td>
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<td>Terrestrial Ecosystem Isotope Ecology</td>
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<td>STAT 511</td>
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<td>Introduction to Probability Theory</td>
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<td>Stochastic Processes I</td>
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<td>STAT 530</td>
<td>Mathematical Statistics</td>
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</table>
A minimum of 30 credits are required to complete this program.

**Master of Science in Ecology, Plan B**

Natural Resources Building, Rooms 237, 238
ecology.colostate.edu (http://ecology.colostate.edu)

N. LeRoy Poff, Director

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A description of the program is available from the program office.

**Effective Fall 2016**

<table>
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<td>ECOL 505</td>
<td>Foundations of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>ECOL 571</td>
<td>Advanced Topics in Ecology</td>
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</tr>
<tr>
<td>ECOL 592</td>
<td>Interdisciplinary Seminar in Ecology</td>
<td>1</td>
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<tr>
<td>ECOL 693</td>
<td>Research Seminar</td>
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</tr>
<tr>
<td><strong>ECOLOGY FUNDAMENTALS</strong></td>
<td></td>
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</tr>
<tr>
<td>Select 6 credits not taken elsewhere in the program from the following:</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>BZ 525</td>
<td>Molecular Ecology</td>
<td></td>
</tr>
<tr>
<td>BZ 535</td>
<td>Behavioral Ecology</td>
<td></td>
</tr>
<tr>
<td>BZ 548</td>
<td>Theory of Population and Evolutionary Ecology</td>
<td></td>
</tr>
<tr>
<td>BZ 578/</td>
<td>Genetics of Natural Populations</td>
<td></td>
</tr>
<tr>
<td>MIP 578</td>
<td></td>
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</tr>
<tr>
<td>ECOL 600</td>
<td>Community Ecology</td>
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<tr>
<td>ECOL 610</td>
<td>Ecosystem Ecology</td>
<td></td>
</tr>
<tr>
<td>ECOL 620</td>
<td>Applications in Landscape Ecology</td>
<td></td>
</tr>
<tr>
<td>ESS 575</td>
<td>Models for Ecological Data</td>
<td></td>
</tr>
<tr>
<td>ESS 660</td>
<td>Biogeochemical Cycling in Ecosystems</td>
<td></td>
</tr>
<tr>
<td>FW 662</td>
<td>Wildlife Population Dynamics</td>
<td></td>
</tr>
<tr>
<td>HORT 576</td>
<td>Advanced Environmental Plant Stress Physiology</td>
<td></td>
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<tr>
<td><strong>ECOLOGY TOOLS</strong></td>
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<tr>
<td>Select 3 credits not taken elsewhere in the program from the following:</td>
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<tr>
<td>AREC 535</td>
<td>Applied Econometrics</td>
<td></td>
</tr>
<tr>
<td>AREC 635</td>
<td>Econometric Theory I</td>
<td></td>
</tr>
<tr>
<td>AREC 735</td>
<td>Econometric Theory II</td>
<td></td>
</tr>
<tr>
<td>BZ 577/</td>
<td>Computer Analysis in Population Genetics</td>
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</tr>
<tr>
<td>MIP 577</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVE 524/</td>
<td>Modeling Watershed Hydrology</td>
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</tr>
<tr>
<td>WR 524</td>
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<td></td>
</tr>
<tr>
<td>ESS 565</td>
<td>Niche Models</td>
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<tr>
<td>ESS 575</td>
<td>Models for Ecological Data</td>
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<tr>
<td>FW 551</td>
<td>Design of Fish and Wildlife Studies</td>
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<tr>
<td>FW 552</td>
<td>Applied Sampling for Wildlife/Fish Studies</td>
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<td>FW 663</td>
<td>Sampling and Analysis of Vertebrate Populations</td>
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<tr>
<td>FW 673/</td>
<td>Hierarchical Modeling in Ecology</td>
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<tr>
<td>STAT 673</td>
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<tr>
<td>GR 503/</td>
<td>Remote Sensing and Image Analysis</td>
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<tr>
<td>NR 503</td>
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</table>
The graduate-level interdisciplinary studies program in Mathematics at CSU is designed for students who seek to enrich their graduate degree by completing an additional program of study in mathematics. The program presumes a background in mathematics that includes sufficient prerequisite material to enter the courses in the program. To be admitted to the program, students must be pursuing a graduate degree in another discipline at CSU.

To be considered for admission to the program, contact the graduate coordinator in the department. Each individual program of study must be submitted to and approved by the Mathematics Graduate Committee.

**Effective Fall 2005**

Students must complete 12 or more credits of non-reserved number Mathematics courses with at least 9 credits at 500-level and above (excluding MATH 505). Up to 3 credits of 400-level Mathematics courses (excluding MATH 425, MATH 470) may be included. Each program of study must be arranged in consultation with the Mathematics Graduate Committee. A GPA of 3.000 or above in all mathematics courses is required to satisfy the program requirements.

**Molecular Biology Interdisciplinary Minor**

Molecular and Radiological Biosciences Building, Room 111 (970) 491-5602

molecular.radiological.biosciences.colostate.edu/minors (http://molecular.radiological.biosciences.colostate.edu/minors)

Coordinated by a Faculty Advisory Board

Erwin Chargaff referred to molecular biology as "the practice of biochemistry without a license" due to the fact that most early molecular biologists were trained as chemists or physicists. This also serves to emphasize that molecular biology is an interdisciplinary field, primarily the study of macromolecular structure and of the replication and expression of the information in our hereditary material (DNA). Jacques Monod defined molecular biology as "the recognition that the essential properties of living beings could be interpreted in terms of the structures of their macromolecules."

Molecular biology is becoming increasingly recognized as a significant area of study, particularly for students interested in the rapidly emerging field of biotechnology. The course requirements for this program complement extant life science degree programs on campus. The Molecular Biology interdisciplinary minor—noted on the transcript—will provide recognition that the student has completed a body of course work that provides both breadth and depth in this area. This program provides students with a strong, well-balanced background in the biological, physical, and mathematical sciences. It is ideally suited for undergraduates who wish to pursue advanced degrees in biochemistry, microbiology, molecular biology, or related life sciences; for pre-professional students in health-related fields; and for students interested in employment in the biotechnology industry. The program includes study of macromolecular structure and function; cellular biochemistry; metabolism; gene expression, DNA structure, replication, and repair; cell organization, communication, growth, aging, and death. Courses in physics, organic chemistry, statistical measurements, and research methods are required. Independent study, internships, or advanced research-oriented laboratory classes are taken during the junior and senior years to provide opportunities for experiential learning and working closely with an interdisciplinary group of faculty.

Students interested in participating in this program should contact the Department of Biochemistry and Molecular Biology (in the Molecular and Radiological Biosciences Building, Room 111, (970) 491-5602).

---

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MATH 530</td>
<td>Mathematics for Scientists and Engineers</td>
</tr>
<tr>
<td>MATH 540</td>
<td>Dynamical Systems</td>
</tr>
<tr>
<td>NR 505</td>
<td>Concepts in GIS</td>
</tr>
<tr>
<td>NR 506</td>
<td>GIS Methods for Resource Management</td>
</tr>
<tr>
<td>NR 512</td>
<td>Spatial Statistical Modeling-Natural Resources</td>
</tr>
<tr>
<td>NR 523/STAT 523</td>
<td>Quantitative Spatial Analysis</td>
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<tr>
<td>NR 554/ANTH 554</td>
<td>Ecological and Social Agent-based</td>
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<tr>
<td>NR 621</td>
<td>Design of Geographic Information Systems</td>
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<tr>
<td>NRRT 765</td>
<td>Applied Multivariate Analysis</td>
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<td>SOCR 522</td>
<td>Micrometeorology</td>
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<tr>
<td>SOCR 620</td>
<td>Modeling</td>
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<td>SOCR 670</td>
<td>Terrestrial Ecosystems Isotope Ecology</td>
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<td>STAT 511</td>
<td>Design and Data Analysis for Researchers I</td>
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<td>Design and Data Analysis for Researchers II</td>
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<td>STAT 520</td>
<td>Introduction to Probability Theory</td>
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<td>STAT 521</td>
<td>Stochastic Processes I</td>
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<td>STAT 530</td>
<td>Mathematical Statistics</td>
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<td>STAT 540</td>
<td>Data Analysis and Regression</td>
</tr>
<tr>
<td>STAT 544</td>
<td>Biostatistical Methods for Quantitative Data</td>
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<td>STAT 560</td>
<td>Applied Multivariate Analysis</td>
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<td>STAT 675A</td>
<td>Topics in Statistical Methods: Sampling</td>
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<td>STAT 675B</td>
<td>Topics in Statistical Methods: Design</td>
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<tr>
<td>STAT 675C</td>
<td>Topics in Statistical Methods: Multivariate and Regression Methods</td>
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<tr>
<td>STAT 675D</td>
<td>Topics in Statistical Methods: Computer Intensive Methods</td>
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<tr>
<td>STAT 675F</td>
<td>Topics in Statistical Methods: Robustness and Nonparametric Methods</td>
</tr>
<tr>
<td>WR 674</td>
<td>Data Issues in Hydrology</td>
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**ADDITIONAL ELECTIVES, AND INDEPENDENT STUDY**  **15**

**Total Credits**  **30**

A minimum of 30 credits are required to complete this program.

**Mathematics Graduate Interdisciplinary Studies Program**

Office in Weber Building, Room 101

math.colostate.edu/programs/graduate/requirements.shtml (http://math.colostate.edu/programs/graduate/requirements.shtml)

Coordinated by the Department of Mathematics

The graduate-level interdisciplinary studies program in Mathematics at CSU is designed for students who seek to enrich their graduate degree by completing an additional program of study in mathematics. The program presumes a background in mathematics that includes sufficient prerequisite material to enter the courses in the program. To be admitted to the program, students must be pursuing a graduate degree in another discipline at CSU.
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

### Code Title Credits

#### Mathematics Core

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<tr>
<td>or MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 307</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
</tbody>
</table>

#### Physics Core

Select one group from the following: 10

**Group A:**

- PH 121 General Physics I (GT-SC1)
- PH 122 General Physics II (GT-SC1)

**Group B:**

- PH 141 Physics for Scientists and Engineers I (GT-SC1)
- PH 142 Physics for Scientists and Engineers II (GT-SC1)

### Chemistry Core

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>1</td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>3</td>
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<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
<td>1</td>
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<tr>
<td>CHEM 345</td>
<td>Organic Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 346</td>
<td>Organic Chemistry II</td>
<td>4</td>
</tr>
</tbody>
</table>

### Biology Core

Select one group from the following: 4-5

**Group A:**

- BZ 310 Cell Biology

**Group B:**

- LIFE 210 Introductory Eukaryotic Cell Biology
- LIFE 212 and Introductory Cell Biology Laboratory
- LIFE 102 Attributes of Living Systems (GT-SC1)

### Biochemistry Core

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
<td>3</td>
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<tr>
<td>BC 403</td>
<td>Comprehensive Biochemistry II</td>
<td>3</td>
</tr>
<tr>
<td>BC 404</td>
<td>Comprehensive Biochemistry Laboratory</td>
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### Microbiology Core

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MIP 342</td>
<td>Immunology</td>
<td>4</td>
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</table>

### Molecular Genetics Core

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
<td>3</td>
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<tr>
<td>or MIP 450</td>
<td>Microbial Genetics</td>
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Select one group from the following: 4-6

**Group A:**

- BZ 350 Molecular and General Genetics

**Group B:**

### Seminar

<table>
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<tr>
<th>Code</th>
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<th>Credits</th>
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<tr>
<td>BC 493</td>
<td>Senior Seminar</td>
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### Selected Courses

Select one course from the following: 3-4

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
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<tr>
<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
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<td>BZ 402</td>
<td>Molecular Cytogenics</td>
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<tr>
<td>BZ 403</td>
<td>Comparative Endocrinology</td>
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<td>BZ 433</td>
<td>Behavioral Genetics</td>
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<tr>
<td>MIP 420</td>
<td>Medical and Molecular Virology</td>
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<td>MIP 443</td>
<td>Microbial Physiology</td>
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### Advanced Laboratory

Select four credits from the following: 4

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<tr>
<td>BC 475</td>
<td>Mentored Research</td>
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<tr>
<td>BC 495</td>
<td>Independent Study</td>
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<tr>
<td>BC 499A</td>
<td>Thesis: Laboratory Research-Based</td>
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<tr>
<td>BC 499B</td>
<td>Thesis: Literature Based</td>
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</tr>
<tr>
<td>BC 499D</td>
<td>Thesis: Literature-based in Pre-Pharmacy</td>
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<tr>
<td>BZ 495</td>
<td>Independent Study</td>
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<tr>
<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
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<tr>
<td>MIP 343</td>
<td>Immunology Laboratory</td>
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<tr>
<td>MIP 425</td>
<td>Virology and Cell Culture Laboratory</td>
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<tr>
<td>MIP 495</td>
<td>Independent Study</td>
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</table>

**Total Credits**: 72-75

### Molecular, Cellular and Integrative Neurosciences Graduate Interdisciplinary Studies Program

Office in Anatomy–Zoology Building, Room W330
Molecular, Cellular and Integrative Neurosciences Special Academic Unit
Michael M. Tamkun, Director

This interdisciplinary graduate research and education program has 28 active faculty participants from 10 departments in 5 colleges. The degree-granting departments are Biochemistry and Molecular Biology; Biology; Biomedical Sciences; Chemical and Biological Engineering; Computer Science; Environmental and Radiological Health Sciences; Microbiology, Immunology and Pathology; Occupational Therapy; and Psychology. The program has been named as one of Colorado State University’s Programs of Research and Scholarly Excellence. Students interested in systems neuroscience and in the cellular and molecular aspects of the nervous system, including neuronal differentiation, degeneration and regeneration, ion channels and membrane physiology, synaptic mechanisms, neuronal circuitry and chronobiology, sensory biology, systems neurobiology, artificial neural networks, and prion
biology are encouraged to apply. Strong undergraduate backgrounds in biology, chemistry, mathematics, and physics are most appropriate.

Students interested in the program should refer to the Graduate and Professional Bulletin.

**Requirements**

**Effective Spring 2003**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>NB 500</td>
<td>Readings in Cellular Neurobiology</td>
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<td>NB 501</td>
<td>Cellular and Molar Neurophysiology</td>
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<tr>
<td>NB 502/CM 502</td>
<td>Techniques in Molecular &amp; Cellular Biology</td>
<td>2</td>
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<tr>
<td>NB 503/BMS 503</td>
<td>Developmental Neurobiology</td>
<td>3</td>
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<tr>
<td>NB 505/BMS 505</td>
<td>Neuronal Circuits, Systems and Behavior</td>
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<td>NB 586</td>
<td>Practicum-Techniques in Neuroscience II</td>
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<td>NB 793</td>
<td>Neuroscience Seminar</td>
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<td>NB 795</td>
<td>Independent Study</td>
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Select one from the following:

<table>
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<th>Title</th>
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<td>NB 796A</td>
<td>Group Study: Ion Channels</td>
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<tr>
<td>NB 796B</td>
<td>Group Study: Neuronal Growth and Regeneration</td>
<td>2</td>
</tr>
<tr>
<td>NB 796C</td>
<td>Group Study: Topics in Neuroscience</td>
<td>2</td>
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<tr>
<td>NB 796D</td>
<td>Group Study: Seizures and Epilepsy</td>
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<tr>
<td>NB 796E</td>
<td>Group Study: Neuroendocrine Mechanisms</td>
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</table>

**Total Credits**

1 Two semesters.

**Effective Fall 2013**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must complete 30 credits, with a minimum of 3 credits in each of at least four subject codes, with no more than 9 credits from any one subject code.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Required Course</td>
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<tr>
<td>LB 386E</td>
<td>Practicum: Arts Production</td>
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<td><strong>Group A</strong></td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>D 110</td>
<td>Understanding Dance (GT-AH1)</td>
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<tr>
<td>JTC 100</td>
<td>Media in Society (GT-SS3)</td>
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<tr>
<td>MU 100</td>
<td>Music Appreciation (GT-AH1)</td>
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<tr>
<td>MU 111</td>
<td>Music Theory Fundamentals (GT-AH1)</td>
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<tr>
<td>TH 175</td>
<td>Storytelling</td>
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<td><strong>Group B</strong></td>
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<td>Select at least six courses for a minimum of 18 credits from the following:</td>
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<td>Dance Techniques I: Modern</td>
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<td>or D 120B</td>
<td>Dance Techniques I: Ballet</td>
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<tr>
<td>or D 120C</td>
<td>Dance Techniques I: Jazz</td>
<td></td>
</tr>
<tr>
<td>D 121A</td>
<td>Dance Techniques II: Modern</td>
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</tr>
<tr>
<td>or D 121B</td>
<td>Dance Techniques II: Ballet</td>
<td></td>
</tr>
<tr>
<td>or D 121C</td>
<td>Dance Techniques II: Jazz</td>
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<tr>
<td>D 126</td>
<td>Dance Improvisation</td>
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<td>D 286</td>
<td>Practicum</td>
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<td>JTC 340</td>
<td>Digital Video Editing</td>
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<td>JTC 345</td>
<td>Electronic Field Production</td>
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<td>JTC 544</td>
<td>Corporate and Institutional Media Production 2</td>
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<tr>
<td>MU 332</td>
<td>History of Jazz</td>
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<tr>
<td>MU 333</td>
<td>History of Rock and Roll</td>
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<tr>
<td>MU 342</td>
<td>Psychology of Music</td>
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<tr>
<td>SPCM 341</td>
<td>Evaluating Contemporary Television</td>
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<tr>
<td>SOC 343</td>
<td>Sport and Society</td>
<td></td>
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<tr>
<td>TH 264</td>
<td>Lighting Design for the Theatre I</td>
<td></td>
</tr>
<tr>
<td>TH 266</td>
<td>Digital Media Design for Live Performance I</td>
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</tr>
<tr>
<td>TH 364</td>
<td>Lighting Design for the Theatre II</td>
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</tr>
<tr>
<td>TH 366</td>
<td>Digital Media Design for Live Performance II</td>
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<tr>
<td><strong>Group C</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 6 credits from the following:</td>
<td>6</td>
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</tr>
<tr>
<td>D 495</td>
<td>Independent Study</td>
<td></td>
</tr>
<tr>
<td>LB 386A</td>
<td>Practicum: CTV</td>
<td></td>
</tr>
<tr>
<td>LB 386B</td>
<td>Practicum: KCSU</td>
<td></td>
</tr>
<tr>
<td>LB 495</td>
<td>Independent Study</td>
<td></td>
</tr>
<tr>
<td>JTC 487</td>
<td>Internship</td>
<td></td>
</tr>
</tbody>
</table>

**Music, Stage, and Sports Production Interdisciplinary Minor**

Office in Clark Building, Room C244
(970) 491-6310
journalism.colostate.edu (http://journalism.colostate.edu)

Professor Steve Weiss, Coordinator

The interdisciplinary minor in Music, Stage, and Sports Production serves students who seek a broad foundation in creating television and audio recordings of events. Students learn theory and get hands-on experience in all aspects of the production process, both in studio and on location. This includes operating television cameras and audio equipment; designing appropriate lighting and audio environments; directing live recordings; and finishing projects through the editing of audio and video. Students can select courses from the six departments in the College of Liberal Arts: Dance, Communication Studies, Journalism and Media Communication, Music, Sociology, and Theatre. The wide range of courses available allows students to focus on specific aspects of the production process or explore the entire spectrum of live and recorded performances. Upon completion of the minor, students will have an electronic production portfolio, which is considered a key requirement for getting a job and succeeding in this growing entertainment arena.
Organic Agriculture Interdisciplinary Minor

Office in Plant Sciences, Room C110
Contact Adriane Elliott, (970) 491-6984
Office in Shepardson, Room 111
Contact Dr. Steve Wallner, (970) 491-7018
organic.colostate.edu (http://organic.colostate.edu)

Coordinated by a Faculty Advisory Board

The Organic Agriculture interdisciplinary minor is designed for students with an interest in alternative agricultural production approaches, in particular, organic agriculture. The focus of this program is on the science of organic agriculture with additional courses specifically focused on organic agriculture production techniques, business management, marketing, and decision making. Experiential learning is a critical part of this field of study and found in many levels in discussions, laboratories, and, most importantly, internship experiences.

The program is a cooperative effort of four departments: Agricultural and Resource Economics, Bioagricultural Sciences and Pest Management, Horticulture and Landscape Architecture, and Soil and Crop Sciences. Although participating students will take courses from all four departments, they will receive their degree from their home department, and completion of requirements for the interdisciplinary minor will be noted on their transcript.

Program details are available from Adriane Elliott (Department of Soil and Crop Sciences) and Leila Graves (Department of Horticulture and Landscape Architecture). For more information, visit our website at organic.colostate.edu (http://organic.colostate.edu).

Effective Fall 2011

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3</td>
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<tr>
<td>AREC 328</td>
<td>Small Agribusiness Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two of the following three groups:

**Group A:**

- BSPM 302 Applied and General Entomology
- BSPM 303A Entomology Laboratory: General
  or BSPM 303B Entomology Laboratory: Horticultural
  or BSPM 303C Entomology Laboratory: Agricultural

**Group B:**

- BSPM 308 Ecology and Management of Weeds

**Group C:**

- BSPM 361 Elements of Plant Pathology

**FSHN 150** Survey of Human Nutrition 3
**HORT 100** Horticultural Science 4
  or **SOCR 100** General Crops

Select two courses from the following:

- HORT 450A Horticulture Food Crops: Cool Season Vegetable Production
- HORT 450B Horticulture Food Crops: Warm Season Vegetable Production
- HORT 450C Horticulture Food Crops: Small Fruit Production
- HORT 450D Horticulture Food Crops: Tree Fruit Production
- HORT 452 Viticulture-Grape Production

Select one course from the following:

- LAND 220/ LIFE 220 Fundamentals of Ecology (GT-SC2)
- LIFE 320 Ecology
- NR 120A Environmental Conservation (GT-SC2)
- SOCR 240 Introductory Soil Science 4
- SOCR 350 Soil Fertility Management 3

**Specific Courses**

- HORT 171/ SOCR 171 Environmental Issues in Agriculture (GT-SS3) 3

Select four courses from the following:

- HORT 344 Organic Greenhouse Production
- SOCR 341 Microbiology for Sustainable Agriculture
- SOCR 342 Organic Soil Fertility
- SOCR 343 Composting Principles and Practices
- SOCR 344 Crop Development Techniques
- SOCR 345/ HORT 345 Diagnosis and Treatment in Organic Fields 2
- SOCR 424/ HORT 424 Topics in Organic Agriculture 3
- SOCR 487/ HORT 487 Internship 3

Total Credits 46

The following courses are recommended for additional study, but are not required.
The Interdisciplinary Program in Sustainable Peace and Reconciliation Studies will be open to all students who want to understand more about the philosophical and educational roots of peace and reconciliation, its expression and potential within various academic disciplines, research, and service, and how these can help address issues of sustainability, i.e., the interrelated health of the environment, society and the economy. Knowing more about the ideas that underlie nonviolent conflict resolution, effective communication, cooperation, and mediation within cross-cultural contexts will help students evaluate how sustainable peace and reconciliation can impact their beliefs, choices and actions. Program details are available from the School of Global Environmental Sustainability.

Additional coursework may be required due to prerequisites.

Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AGRI 116/IE 116</td>
<td>Plants and Civilizations (GT-SS3)</td>
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<tr>
<td>AGRI 270/IE 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
<td>3</td>
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<tr>
<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AREC 310</td>
<td>Agricultural Marketing</td>
<td>3</td>
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<tr>
<td>AREC 478</td>
<td>Agricultural Policy</td>
<td>3</td>
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<tr>
<td>BSPM 451</td>
<td>Integrated Pest Management</td>
<td>3</td>
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<tr>
<td>HORT 310</td>
<td>Greenhouse Management</td>
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<td>HORT 401</td>
<td>Medicinal and Value-Added Uses of Plants</td>
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<td>Select three credits from the following: 1</td>
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<tr>
<td>HORT 450A</td>
<td>Horticulture Food Crops: Cool Season Vegetable</td>
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<td>or HORT 450</td>
<td>Horticulture Food Crops: Warm Season Vegetable</td>
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<tr>
<td>or HORT 450</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
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<tr>
<td>or HORT 450</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
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</tr>
<tr>
<td>HORT 452</td>
<td>Viticulture-Grape Production 2</td>
<td>1</td>
</tr>
<tr>
<td>HORT 454</td>
<td>Horticulture Crop Production and Management</td>
<td>2</td>
</tr>
<tr>
<td>HORT 476</td>
<td>Environmental Plant Stress Physiology</td>
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<tr>
<td>PHIL 330/</td>
<td>Agricultural and Food System Ethics</td>
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<tr>
<td>AGRI 330</td>
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<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
<td>3</td>
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<tr>
<td>RRM 400</td>
<td>Food and Society</td>
<td>3</td>
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<tr>
<td>SOC 341</td>
<td>Sociology of Rural Life</td>
<td>3</td>
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<tr>
<td>SOC 364</td>
<td>Agriculture and Global Society</td>
<td>3</td>
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<tr>
<td>SOC 461</td>
<td>Water, Society, and Environment</td>
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<tr>
<td>SOCR 351</td>
<td>Soil Fertility Laboratory</td>
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</tr>
<tr>
<td>SOCR 370</td>
<td>Irrigation Principles</td>
<td>2</td>
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<tr>
<td>SOCR 420</td>
<td>Crop and Soil Management Systems I</td>
<td>3</td>
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<tr>
<td>SOCR 421</td>
<td>Crop and Soil Management Systems II</td>
<td>4</td>
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</tbody>
</table>

1. The other three modules not taken above.
2. If not taken above.

Sustainable Peace and Reconciliation Studies Graduate Interdisciplinary Studies Program

108 Johnson Hall
(970) 492-4215

Coordinated by the School of Global Environmental Sustainability (http://sustainability.colostate.edu).

The Interdisciplinary Program in Sustainable Peace and Reconciliation Studies will be open to all students who want to understand more about the philosophical and educational roots of peace and reconciliation, its expression and potential within various academic disciplines, research, and service, and how these can help address issues of sustainability, i.e., the interrelated health of the environment, society and the economy. Knowing more about the ideas that underlie nonviolent conflict resolution, effective communication, cooperation, and mediation within cross-cultural contexts will help students evaluate how sustainable peace and reconciliation can impact their beliefs, choices and actions. Program details are available from the School of Global Environmental Sustainability.

Additional coursework may be required due to prerequisites.

Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 679/IE 679</td>
<td>Applications of International Development</td>
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<td>Select one course from the following: 3</td>
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<td>EDUC 696</td>
<td>Group Study 1</td>
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<td>PHIL 697</td>
<td>Group Study 1</td>
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Core Courses

Select six credits from the following with at least two subject codes included:

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 535</td>
<td>Globalization and Culture Change</td>
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<tr>
<td>EDUC 629</td>
<td>Communication and Classrooms</td>
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<tr>
<td>EDUC 635</td>
<td>Educators, Systems and Change</td>
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</tr>
<tr>
<td>EDUC 651</td>
<td>Multicultural and Special Populations</td>
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</tr>
<tr>
<td>ETST 540/</td>
<td>Race in Latin America</td>
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<tr>
<td>SPCM 540</td>
<td></td>
<td></td>
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<tr>
<td>HDFS 534</td>
<td>Marriage and Family Therapy</td>
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<tr>
<td>HDFS 624</td>
<td>Skills and Techniques in Family Therapy</td>
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</tr>
<tr>
<td>IE 550/</td>
<td>Ethics and International Development</td>
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<tr>
<td>PHIL 550</td>
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<tr>
<td>JTC 513</td>
<td>Impacts of New Communication Technologies</td>
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<tr>
<td>PHIL 684</td>
<td>Supervised College Teaching 2</td>
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<tr>
<td>POLS 541</td>
<td>Political Economy of Change and Development</td>
<td></td>
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<tr>
<td>POLS 670</td>
<td>Politics of Environment and Sustainability</td>
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<tr>
<td>SOC 630</td>
<td>Social Stratification</td>
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<tr>
<td>SOC 660</td>
<td>Theories of Development and Social Change</td>
<td></td>
</tr>
<tr>
<td>SOC 661</td>
<td>Gender and Global Society</td>
<td></td>
</tr>
<tr>
<td>SOC 663</td>
<td>Sociology of Sustainable Development</td>
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</tr>
<tr>
<td>SOC 666</td>
<td>Globalization and Socioeconomic Restructuring</td>
<td></td>
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<tr>
<td>SOC 669</td>
<td>Global Inequality and Change</td>
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<tr>
<td>SOWK 551</td>
<td>Fundamentals of Mediation</td>
<td></td>
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<td>SOWK 556</td>
<td>Divorce and Family Mediation</td>
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<tr>
<td>SPCM 634</td>
<td>Communication and Cultural Diversity</td>
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<td>Total</td>
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</tbody>
</table>

Program Total Credits 12

1. Choice of topic and project requires approval of faculty advisor.
2. To be done in PHIL 240.

Role of Sustainability in Peace and Reconciliation Interdisciplinary Minor

108 Johnson Hall
The Role of Sustainability in Peace and Reconciliation Studies
Interdisciplinary Minor is open to all students who want to understand more about the philosophical roots of peace and reconciliation and its expression within various academic disciplines, research, and service. Knowing more about the ideas that underlie nonviolent conflict resolution, effective communication, cooperation, and mediation within cross-cultural contexts will help students evaluate how peace and reconciliation can impact their beliefs, choices, and actions. A 21-credit undergraduate minor and 12-credit graduate interdisciplinary studies program are available.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Effective Spring 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Core Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GES 101</td>
<td>Foundations of Environmental Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 240</td>
<td>Philosophies of Peace and Nonviolence</td>
<td>3</td>
</tr>
<tr>
<td>IE 479/ANTH 479</td>
<td>International Development Theory and Practice</td>
<td>3</td>
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<tr>
<td>Select one from the following courses:</td>
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<tr>
<td>EDUC 496</td>
<td>Group Study</td>
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<tr>
<td>IE 472</td>
<td>Education for Global Peace</td>
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<td>PHIL 497</td>
<td>Group Study</td>
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</table>

Elective Credits: Select 9 credits from ONE of the Aspects lists below:

**Environmental, Societal, and Economics Aspects**

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<tbody>
<tr>
<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
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<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
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<tr>
<td>AREC 240/ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
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</tr>
<tr>
<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
<td></td>
</tr>
<tr>
<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
<td></td>
</tr>
<tr>
<td>ERHS 320</td>
<td>Environmental Health - Water and Food Safety</td>
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<tr>
<td>ERHS 430</td>
<td>Human Disease and the Environment</td>
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<tr>
<td>ERHS 448</td>
<td>Environmental Contaminants: Exposure and Fate</td>
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<tr>
<td>ETST 256</td>
<td>Border Crossings: People/Politics/Culture (GT-SS3)</td>
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</table>

**Personal, Psychological, Ethical and Legal Aspects**

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>ANTH 329</td>
<td>Cultural Change</td>
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<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td></td>
</tr>
<tr>
<td>ETST 430</td>
<td>Latina/o Creative Expression</td>
<td></td>
</tr>
<tr>
<td>ETST 432</td>
<td>Latina/o Routes to Empowerment</td>
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<tr>
<td>ETST 444/SOC 444</td>
<td>Federal Indian Law and Policy</td>
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<tr>
<td>HDFS 332</td>
<td>Death, Dying, and Grief</td>
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</tr>
<tr>
<td>HIST 250/ ETST 250</td>
<td>African American History (GT-HI1)</td>
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<tr>
<td>HIST 252/ ETST 252</td>
<td>Asian American History (GT-HI1)</td>
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<tr>
<td>HIST 346</td>
<td>Reconstruction and the New South</td>
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<tr>
<td>HIST 360</td>
<td>United States Immigration History</td>
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<td>HIST 414</td>
<td>Revolutions in Latin America</td>
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<tr>
<td>HONR 192</td>
<td>Honors First Year Seminar 1</td>
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<td>HONR 193</td>
<td>Honors Seminar 2</td>
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<tr>
<td>IE 179</td>
<td>Globalization: Exploring Our Global Village (GT-SS3)</td>
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<tr>
<td>IE 270/AGRI 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
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<td>IE 550/PHEL 550</td>
<td>Ethics and International Development</td>
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<td>PSY 316</td>
<td>Environmental Psychology</td>
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<td>SPCM 232</td>
<td>Group Communication</td>
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**Local, National and International Policy Aspects**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>HIST 421</td>
<td>Africa: Colonialism to Independence</td>
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<tr>
<td>HIST 438</td>
<td>The Modern Middle East</td>
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<tr>
<td>HIST 460</td>
<td>Slavery in the Americas</td>
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<tr>
<td>HIST 465</td>
<td>Pacific Wars: Korea and Vietnam</td>
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<tr>
<td>IE 370</td>
<td>Model United Nations</td>
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<tr>
<td>IE 470</td>
<td>Women and Development</td>
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<tr>
<td>IE 471</td>
<td>Children and Youth in Global Context</td>
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<tr>
<td>JTC 411</td>
<td>Media Ethics and Issues</td>
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<td>JTC 412</td>
<td>International Mass Communication</td>
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<tr>
<td>NR 440</td>
<td>Applications in Conservation Planning</td>
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<tr>
<td>POLS 331</td>
<td>Politics and Society Along Mexican Border</td>
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<tr>
<td>POLS 405</td>
<td>Race and Ethnicity in U.S. Politics</td>
<td></td>
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</table>
POLS 413 U.S. Civil Rights and Liberties
POLS 437 International Security
POLS 448 Comparative Racial/Ethnic Politics
POLS 449 Middle East Politics
PSY 330 Clinical and Counseling Psychology
PSY 437 Psychology of Gender
SOC 320 Population-Natural Resources and Environment
SOC 362 Social Change
SOC 431 Community Dynamics and Development
SOWK 330 Human Diversity Practice Issues
SOWK 450/IE 450 International Social Welfare and Development
SPCM 434 Intercultural Communication

Total Credits 21

1 Titled “Peacemaking.” Must be enrolled in University Honors program.
2 Titled “Exploring Sustainable Solutions.” Must be enrolled in University Honors program.

Ph.D. in Bioengineering
Intra-University in Colleges of Health and Human Sciences, Engineering, Natural Sciences, Veterinary Medicine and Biomedical Sciences
Effective Fall 2007

Core Course Requirements
Select one from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOM 533/</td>
<td>Biomolecular Tools for Engineers</td>
<td>3</td>
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<tr>
<td>CIVE 533</td>
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<tr>
<td>CM 702B</td>
<td>Methods in Cell and Molecular Biology:</td>
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<tr>
<td></td>
<td>Mammalian Cell Culture Techniques</td>
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<tr>
<td>CM 702C</td>
<td>Methods in Cell and Molecular Biology:</td>
<td></td>
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<tr>
<td></td>
<td>Immunochemical Techniques</td>
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<tr>
<td>CM 702D</td>
<td>Methods in Cell and Molecular Biology:</td>
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<tr>
<td></td>
<td>Radiation Cytogenetics</td>
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<td>CM 702E</td>
<td>Methods in Cell and Molecular Biology:</td>
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<td>Flow Cytometry and Cell Sorting</td>
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<td>BIOM 570/</td>
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<td>MECH 570</td>
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<td>MATH 530</td>
<td>Mathematics for Scientists and Engineers</td>
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<tr>
<td>STAT 512</td>
<td>Design and Data Analysis for Researchers II</td>
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Total Credits 15

Specific requirements for the Ph.D. in Bioengineering
- 10 credits earned after master's degree is accepted for credit with approval from the student’s major advisor, the bioengineering program, and the Graduate School.
- Minimum of 12 semester credits in 500 level (and above) formerly taught courses (not including dissertation and independent study) earned at CSU (post master's degree). The preceding list of core courses must be satisfied (15 credits). In addition, at least two life science courses (500-level or above) and two engineering courses (500-level or above) must be taken (12 credits minimum) as part of their graduate study (either as a master's student or Ph.D. student).
- Successful completion of the qualifying exam.
- Successful completion of the preliminary exam.
- Successful completion of the dissertation defense.

Ph.D. in Ecology
Natural Resources Building, Rooms 237, 238
ecology.colostate.edu (http://ecology.colostate.edu)
N. LeRoy Poff, Director

The Graduate Degree Program in Ecology Special Academic Unit offers outstanding opportunities for graduate studies in basic and applied aspects of ecology. Any graduate student enrolled in a master's or doctoral degree program with a major advisor who is a member of the GDPE faculty may participate in this university-wide, interdisciplinary Ecology program, which offers M.S. and Ph.D. degrees in Ecology. The program is a cooperative effort among over 155 faculty members from 17 departments and 6 colleges of CSU who share a common interest in ecology.

The primary goal of the program is to provide basic training in current ecological methods, theories, concepts, controversies, and applications by drawing together individuals and synthesizing knowledge from a wider variety of traditional disciplinary areas of science.

Through the cooperation of the many academic departments and government agencies, the program offers a wide array of facilities, field research sites, equipment, and support services. Because of its location, one of CSU's greatest resources is its accessibility to a wide variety of field study sites. Nearby major habitats include: shortgrass steppe and mixed grass prairies; sagebrush steppe; montane and subalpine meadows, forests; southwestern deserts; alpine peaks; river and lake systems; and numerous agroecosystems.

A description of the program is available from the program office.

Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>ECOL 505</td>
<td>Foundations of Ecology</td>
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<td>ECOL 571</td>
<td>Advanced Topics in Ecology</td>
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<td>ECOL 592</td>
<td>Interdisciplinary Seminar in Ecology</td>
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<td>ECOL 693</td>
<td>Research Seminar</td>
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ECOLOGY FUNDAMENTALS
Select 6 credits not taken elsewhere in the program from the following:

<table>
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<tbody>
<tr>
<td>BZ 525</td>
<td>Molecular Ecology</td>
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<tr>
<td>BZ 535</td>
<td>Behavioral Ecology</td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
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<tr>
<td>BZ 548</td>
<td>Theory of Population and Evolutionary Ecology</td>
</tr>
<tr>
<td>BZ 578/MIP 578</td>
<td>Genetics of Natural Populations</td>
</tr>
<tr>
<td>ECOL 600</td>
<td>Community Ecology</td>
</tr>
<tr>
<td>ECOL 610</td>
<td>Ecosystem Ecology</td>
</tr>
<tr>
<td>ECOL 620</td>
<td>Applications in Landscape Ecology</td>
</tr>
<tr>
<td>ESS 575</td>
<td>Models for Ecological Data</td>
</tr>
<tr>
<td>ESS 660</td>
<td>Biogeochemical Cycling in Ecosystems</td>
</tr>
<tr>
<td>FW 662</td>
<td>Wildlife Population Dynamics</td>
</tr>
<tr>
<td>HORT 576</td>
<td>Advanced Environmental Plant Stress Physiology</td>
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**ECOLOGY TOOLS**

Select 3 credits not taken elsewhere in the program from the following:

<table>
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<tbody>
<tr>
<td>AREC 535/ECON 535</td>
<td>Applied Econometrics</td>
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<tr>
<td>AREC 635/ECON 635</td>
<td>Econometric Theory I</td>
<td></td>
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<tr>
<td>AREC 735/ECON 735</td>
<td>Econometric Theory II</td>
<td></td>
</tr>
<tr>
<td>BZ 577/MIP 577</td>
<td>Computer Analysis in Population Genetics</td>
<td></td>
</tr>
<tr>
<td>CIVE 524/WR 524</td>
<td>Modeling Watershed Hydrology</td>
<td></td>
</tr>
<tr>
<td>ERHS 544/STAT 544</td>
<td>Biostatistical Methods for Quantitative Data</td>
<td></td>
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<tr>
<td>ESS 565</td>
<td>Niche Models</td>
<td></td>
</tr>
<tr>
<td>ESS 575</td>
<td>Models for Ecological Data</td>
<td></td>
</tr>
<tr>
<td>FW 551</td>
<td>Design of Fish and Wildlife Studies</td>
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<tr>
<td>FW 552</td>
<td>Applied Sampling for Wildlife/Fish Studies</td>
<td></td>
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<tr>
<td>FW 663</td>
<td>Sampling and Analysis of Vertebrate Populations</td>
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<tr>
<td>FW 673/STAT 673</td>
<td>Hierarchical Modeling in Ecology</td>
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<tr>
<td>GR 503/NR 503</td>
<td>Remote Sensing and Image Analysis</td>
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<tr>
<td>MATH 530</td>
<td>Mathematics for Scientists and Engineers</td>
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<tr>
<td>MATH 540</td>
<td>Dynamical Systems</td>
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<tr>
<td>NR 505</td>
<td>Concepts in GIS</td>
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<tr>
<td>NR 506</td>
<td>GIS Methods for Resource Management</td>
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<tr>
<td>NR 512</td>
<td>Spatial Statistical Modeling-Natural Resources</td>
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<tr>
<td>NR 523/STAT 523</td>
<td>Quantitative Spatial Analysis</td>
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<tr>
<td>NR 554/ANTH 554</td>
<td>Ecological and Social Agent-based Modeling</td>
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<tr>
<td>NR 621</td>
<td>Design of Geographic Information Systems</td>
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<td>NRRT 765</td>
<td>Applied Multivariate Analysis</td>
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<tr>
<td>SOCR 522</td>
<td>Micrometeorology</td>
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<tr>
<td>SOCR 620</td>
<td>Modeling Ecosystem Biogeochemistry</td>
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<td>SOCR 670</td>
<td>Terrestrial Ecosystems Isotope Ecology</td>
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<td>STAT 511</td>
<td>Design and Data Analysis for Researchers I</td>
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<tr>
<td>STAT 512</td>
<td>Design and Data Analysis for Researchers II</td>
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</tr>
<tr>
<td>STAT 520</td>
<td>Introduction to Probability Theory</td>
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<tr>
<td>STAT 521</td>
<td>Stochastic Processes I</td>
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</tr>
<tr>
<td>STAT 530</td>
<td>Mathematical Statistics</td>
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<tr>
<td>STAT 540</td>
<td>Data Analysis and Regression</td>
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<tr>
<td>STAT 560</td>
<td>Applied Multivariate Analysis</td>
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<tr>
<td>STAT 675A</td>
<td>Topics in Statistical Methods: Sampling</td>
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<td>STAT 675B</td>
<td>Topics in Statistical Methods: Design</td>
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<tr>
<td>STAT 675C</td>
<td>Topics in Statistical Methods: Multivariate and Regression Methods</td>
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<td>STAT 675D</td>
<td>Topics in Statistical Methods: Computer Intensive Methods</td>
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<tr>
<td>STAT 675F</td>
<td>Topics in Statistical Methods: Robustness and Nonparametric Methods</td>
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<tr>
<td>WR 674</td>
<td>Data Issues in Hydrology</td>
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**ADDITIONAL ELECTIVES, INDEPENDENT STUDY, RESEARCH, AND DISSERTATION**

Total Credits 72

A minimum of 72 credits are required to complete this program.

1 Take two semesters; minimum 2 credits total to graduate.

---

**Political Communication Interdisciplinary Minor**

Office in Clark Building, Room C346
(970) 491-5156
polisci.colostate.edu (http://polisci.colostate.edu)

The Political Communication Interdisciplinary Minor is designed for students interested in the way ideas are communicated and shape the political process. It emphasizes the knowledge and abilities relevant to participation in political environments. The minor is particularly relevant for students interested in communication, law, politics, public administration, public deliberation, public policy, and other professions that deal with issues in public settings.

Coordinated by the Department of Political Science.

**Effective Fall 2015**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td>3</td>
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<tr>
<td>SPCM 420</td>
<td>Political Communication</td>
<td>3</td>
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</table>

**POLITICAL SCIENCE**

Select 6-9 credits from the following:

1 Take two semesters; minimum 2 credits total to graduate.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>POLS 302</td>
<td>U.S. Political Parties and Elections</td>
<td></td>
</tr>
<tr>
<td>POLS 303</td>
<td>Politics of Organized Interests</td>
<td></td>
</tr>
<tr>
<td>POLS 304</td>
<td>Legislative Politics</td>
<td></td>
</tr>
<tr>
<td>POLS 306</td>
<td>Executive Politics</td>
<td></td>
</tr>
<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
<td></td>
</tr>
</tbody>
</table>
Political Economy Graduate Interdisciplinary Studies Program

Program Requirements

1. A minimum of fifteen (15) credits from among the approved courses.
2. A minimum of nine (9) credits from the list of Core Courses. These must be from three (3) different departments.
3. A maximum of six (6) credits from the list of Elective Courses.
4. A maximum of three (3) upper-division undergraduate credits.
5. A GPA of at least 3.0 in the program courses.

Effective Fall 2004

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td></td>
<td><strong>Core Courses</strong></td>
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<td></td>
<td>A minimum of nine (9) credits from three (3) different departments must be used towards the program. Additional core credits can be used to satisfy program requirements.</td>
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<tr>
<td>ANTH 528</td>
<td>Economic Anthropology</td>
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<tr>
<td>ANTH 535</td>
<td>Globalization and Culture Change</td>
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<tr>
<td>ECON 505</td>
<td>History of Economic Thought</td>
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<tr>
<td>ECON 760</td>
<td>Theories of Economic Development</td>
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<tr>
<td>POLS 532</td>
<td>Governance of the World Political Economy</td>
<td></td>
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<tr>
<td>POLS 541</td>
<td>Political Economy of Change and Development</td>
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<tr>
<td></td>
<td><strong>Elective Courses</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A maximum of six (6) credits can be used to satisfy the requirements of the program. A maximum of three (3) upper-division undergraduate credits can be used to satisfy the program requirements.</td>
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<tr>
<td>ANTH 318/ETST 318</td>
<td>Latin American Peasants</td>
<td></td>
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<tr>
<td>ANTH 413/ETST 414</td>
<td>Indigenous Peoples Today</td>
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<tr>
<td>ANTH 530</td>
<td>Human-Environment Interactions</td>
<td></td>
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<tr>
<td>ECON 370</td>
<td>Comparative Economic Systems</td>
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<tr>
<td>ECON 376</td>
<td>Marxist Economic Thought</td>
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<tr>
<td>ECON 379/HIST 379</td>
<td>Economic History of the United States</td>
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<tr>
<td>ECON 474</td>
<td>Recent Economic Thought</td>
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<tr>
<td>ECON 570</td>
<td>Evolution of Economic Thought</td>
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<tr>
<td>ECON 705</td>
<td>Heterodox Approaches to Economics</td>
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<tr>
<td>ECON 742</td>
<td>International Production and Monetary Theory</td>
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<td>ECON 770</td>
<td>Economic Thought and Systems</td>
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<tr>
<td>ECON 772</td>
<td>Marxian Political Economy</td>
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<tr>
<td>HIST 321</td>
<td>Industrial Society in Europe, 1600-1871</td>
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<tr>
<td>HIST 322</td>
<td>Industrial Society in Europe, 1871-1989</td>
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<tr>
<td>HIST 333</td>
<td>Contemporary Europe</td>
<td></td>
</tr>
<tr>
<td>HIST 346</td>
<td>Reconstruction and the New South</td>
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<tr>
<td>HIST 348</td>
<td>United States, 1917-1945</td>
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<tr>
<td>HIST 350</td>
<td>United States Foreign Relations Since 1914</td>
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<td>HIST 414</td>
<td>Revolutions in Latin America</td>
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</tr>
<tr>
<td>HIST 422</td>
<td>Modern Africa</td>
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<td>JTC 412</td>
<td>International Mass Communication</td>
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<tr>
<td>POLS 431</td>
<td>International Law</td>
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<tr>
<td>POLS 433</td>
<td>International Organization</td>
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<tr>
<td>POLS 670</td>
<td>Politics of Environment and Sustainability</td>
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<td>POLS 739</td>
<td>International Environmental Politics</td>
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<tr>
<td>SOC 366</td>
<td>Peoples and Institutions of Latin America</td>
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<tr>
<td>SOC 502</td>
<td>Foundations of Theoretical Sociology</td>
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</tr>
<tr>
<td>SOC 660</td>
<td>Theories of Development and Social Change</td>
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<tr>
<td>SOC 669</td>
<td>Global Inequality and Change</td>
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</table>

Total Credits 15

A minimum of 15 credits are required to complete this program.
Public Health

Sage Hall
(970) 491-5800
publichealth.colostate.edu (http://publichealth.colostate.edu)

Dr. Lorann Stallones, Director
Kendra Bigsby (kendra.bigsby@colostate.edu), Assistant Director

The Master of Public Health (MPH) is the primary professional degree in the field of public health. The MPH degree is intended for students who plan careers as practitioners and leaders in the field of public health. Core academic public health areas include biostatistics, epidemiology, environmental health sciences, health services administration, and community and behavioral health.

The program is operated as one component of the Colorado School of Public Health (ColoradoSPH) which is a cooperative program between the University of Colorado (CU) Anschutz Medical Campus, CSU, and the University of Northern Colorado (UNC). The ColoradoSPH received accreditation from the Council on Education in Public Health in 2010. The program is an interdisciplinary Special Academic Unit at Colorado State University.

Areas of study at CSU include: animals, people, and the environment; epidemiology; global health and health disparities; health communication; physical activity and healthy lifestyles; and public health nutrition. Any of the CSU concentrations can be paired with Peace Corps Masters International (PCMI (http://www.publichealth.colostate.edu/academics/pcmi-mph-program)). Dual degree programs are available in veterinary medicine (DVM/MPH (http://csu-cvmbs.colostate.edu/dvm-program/Pages/DVM-MPH.aspx)) and social work (MSW/MPH (http://publichealth.colostate.edu/dual-degree/mph-msw)). Individuals in the Public Health Nutrition (http://publichealth.colostate.edu/concentration/public-health-nutrition) concentration may also have the option to satisfy dietetic requirements for the dietetic internship.

Please note that individuals wishing to apply to the Colorado School of Public Health at CU do not apply to the CSU Graduate School. Applications are submitted through SOPHAS, an online application portal for accredited programs and schools of public health. More information on this application process can be found here (http://www.ucdenver.edu/academics/colleges/PublicHealth/admissionsandaid/howtoapply/Pages/MPHReqs.aspx).

More information on the Colorado School of Public Health, admissions requirements, and the options available at all three campuses can be found here (http://www.ucdenver.edu/academics/colleges/PublicHealth/Academics/degreesandprograms/Pages/mph.aspx).

Detailed information about all of the academic options in the ColoradoSPH at the CSU campus can be found here (http://publichealth.colostate.edu).

Religious Studies Interdisciplinary Minor

Office in Clark, Room B-356
(970) 491-6335

Coordinated by a Faculty Advisory Board and the Associate Dean, College of Liberal Arts

The Religious Studies interdisciplinary minor permits students to use electives to complete 21 credits from a list of approved courses.

The program encompasses the major religious traditions of humankind. It enables students to integrate a field of special interest from offerings in religious studies and related areas. Consequently, students may become acquainted with religion as viewed by different disciplines, e.g., philosophy, history, psychology, sociology, and anthropology. In addition, the program encourages students to view religious phenomena in their cultural context through the media of music and the arts.

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

- 21 credits, ordinarily seven courses in at least three disciplines are required.
- A minimum grade point average of 2.000 is required in courses selected for the program.

<table>
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<tr>
<td>PHIL 171</td>
<td>Religions of the West</td>
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<tr>
<td>PHIL 172</td>
<td>Religions of the East</td>
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Additional Courses

In consultation with a Religious Studies advisor, select fifteen credits, of which at least 12 must be upper-division (300- to 400-level), with at least three different subject codes from the Additional Courses list.

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<tbody>
<tr>
<td>ANTH 312</td>
<td>Modern Indian Culture and Society</td>
</tr>
<tr>
<td>ANTH 322</td>
<td>The Anthropology of Religion</td>
</tr>
<tr>
<td>ANTH 340</td>
<td>Medical Anthropology</td>
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<tr>
<td>ANTH 423</td>
<td>Cultural Psychiatry</td>
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<td>ANTH 539</td>
<td>Anthropology of Modernity</td>
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<tr>
<td>ART 411</td>
<td>History of Medieval Art</td>
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<tr>
<td>ART 496H</td>
<td>Group Study: Art History 2</td>
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<tr>
<td>E 337</td>
<td>Western Mythology</td>
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<tr>
<td>E 460</td>
<td>Chaucer</td>
</tr>
<tr>
<td>E 463</td>
<td>Milton</td>
</tr>
<tr>
<td>HIST 115</td>
<td>The Islamic World: Late Antiquity to 1500</td>
</tr>
<tr>
<td>HIST 116</td>
<td>The Islamic World Since 1500</td>
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<tr>
<td>HIST 120</td>
<td>Asian Civilizations I (GT-H11)</td>
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<tr>
<td>HIST 308</td>
<td>Ancient Christianity to 500 A.D.</td>
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<td>HIST 309</td>
<td>Medieval Christianity, 500-1500</td>
</tr>
<tr>
<td>HIST 310</td>
<td>Medieval Europe</td>
</tr>
<tr>
<td>HIST 317</td>
<td>Renaissance and Reformation Europe</td>
</tr>
<tr>
<td>HIST 323</td>
<td>Russia Before 1700</td>
</tr>
<tr>
<td>HIST 430</td>
<td>Ancient Near East</td>
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<tr>
<td>HIST 431</td>
<td>Ancient Israel</td>
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<td>HIST 432</td>
<td>Sacred History in the Bible and the Qur’an</td>
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<td>HIST 433</td>
<td>Muhammad and the Origins of Islam</td>
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<td>Code</td>
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<tr>
<td>HIST 438</td>
<td>The Modern Middle East</td>
</tr>
<tr>
<td>HIST 450</td>
<td>Ancient China</td>
</tr>
<tr>
<td>HIST 451</td>
<td>Medieval China and Central Asia</td>
</tr>
<tr>
<td>HIST 452</td>
<td>China in the Modern World, 1600-Present</td>
</tr>
<tr>
<td>HIST 455</td>
<td>Tokugawa and Modern Japan, 1600-Present</td>
</tr>
<tr>
<td>HIST 467</td>
<td>Modern Jewish History</td>
</tr>
<tr>
<td>HIST 469</td>
<td>The Crusades</td>
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<tr>
<td>LB 170</td>
<td>World Literatures to 1500 (GT-AH2)</td>
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<tr>
<td>PHIL 170</td>
<td>World Philosophies (GT-AH3)</td>
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<tr>
<td>PHIL 173</td>
<td>Philosophy of Traditional Judaism</td>
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<td>PHIL 270</td>
<td>Issues in the Study of Religion</td>
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<tr>
<td>PHIL 335</td>
<td>Islam: Cosmology and Practice</td>
</tr>
<tr>
<td>PHIL 349</td>
<td>Philosophies of East Asia</td>
</tr>
<tr>
<td>PHIL 355</td>
<td>Philosophy of Religion</td>
</tr>
<tr>
<td>PHIL 359</td>
<td>Philosophy of Human Nature</td>
</tr>
<tr>
<td>PHIL 360</td>
<td>Topics in Asian Philosophy</td>
</tr>
<tr>
<td>PHIL 370</td>
<td>Contemporary Western Religious Thought</td>
</tr>
<tr>
<td>PHIL 371</td>
<td>Contemporary Eastern Religious Thought</td>
</tr>
<tr>
<td>PHIL 372</td>
<td>Meaning and Truth in Religion</td>
</tr>
<tr>
<td>PHIL 375</td>
<td>Science and Religion</td>
</tr>
<tr>
<td>PHIL 379</td>
<td>Mysticism East and West</td>
</tr>
<tr>
<td>PHIL 455</td>
<td>Islamic Philosophy</td>
</tr>
<tr>
<td>PHIL 463</td>
<td>Seminar in Religious Studies</td>
</tr>
<tr>
<td>PHIL 479</td>
<td>Topics in Comparative Religions</td>
</tr>
<tr>
<td>PHIL 497</td>
<td>Group Study 1</td>
</tr>
<tr>
<td>PSY 305</td>
<td>Psychology of Religion</td>
</tr>
<tr>
<td>SOC 375</td>
<td>Sociology of Religion and Medicine</td>
</tr>
</tbody>
</table>

Total Credits: 21

1. ANTH 539 may be selected.
2. Accepted only when designated "Image of the Goddess in Art."
3. Accepted only when designated selected religious themes.

### Resilience of Social Ecological Systems Graduate Interdisciplinary Studies Program

In addition to the required course, students must select one course from each of the four Groups below, A, B, C, and D, for a minimum total of 15 credits. A minimum of 9 credits must be taken at the 500-level or above. At least two courses must be from outside the student's discipline or sub-discipline. A minimum total of 15 credits is required.

### Effective Spring 2013

#### Code | Title | Credits
---|---|---
**Required Course** | | |
ANTH 530 | Human-Environment Interactions | 3 |

#### Group A: Concepts of Cultural and Social Systems in Environment Context

AGRI 330/PHIL 330 | Agricultural and Food System Ethics | 3 |

ANTH 329 | Cultural Change | 3 |

**Group B: Concepts and Methods of Ecology and People**

AGRI 500 | Advanced Issues in Agriculture | 3 |

AGRI 562/SOC 562 | Sociology of Food Systems and Agriculture | 3 |

ANTH 330/PHIL 330 | Human Ecology | 3 |

ANTH 453 | Impacts on Ancient Environments | 3 |

ANTH 515 | Culture and Environment | 3 |

ANTH 572 | Human Origins | 3 |

ANTH 573 | Paleoclimate and Human Evolution | 3 |

BZ 353/NR 353 | Global Change Ecology, Impacts and Mitigation | 3 |

RS 351 | Wildland Ecosystems in a Changing World | 3 |

#### Group C: Concepts and Methods of Governance and Economy

AREC 340/ECON 340 | Introduction: Economics of Natural Resources | 3 |

AREC 460 | Ag- and Resource-Based Economic Development | 3 |

AREC 478 | Agricultural Policy | 3 |

AREC 540/ECON 540 | Environmental and Natural Resource Economics | 3 |

AREC 541/ECON 541 | Environmental Economics | 3 |

NR 320 | Natural Resources History and Policy | 3 |

NR 625 | Community-Based Natural Resource Management | 3 |

POLS 362 | Global Environmental Politics | 3 |

POLS 532 | Governance of the World Political Economy | 3 |

POLS 670 | Politics of Environment and Sustainability | 3 |

POLS 739 | International Environmental Politics | 3 |

**Group D: Skills and Methods**

ANTH 352 | Geoarchaeology | 3 |

ANTH 441 | Method in Cultural Anthropology | 3 |

ANTH 443 | Ethnographic Field Methods | 3 |

ANTH 461 | Anthropological Report Preparation | 3 |

ANTH 544 | From Death to Discovery | 3 |

ESS 575 | Models for Ecological Data | 3 |

GR 323/NR 323 | Remote Sensing and Image Interpretation | 3 |
A minimum of 15 credits are required to complete this program.

**Russian Studies Interdisciplinary Minor**

Office in Andrew G. Clark Building, Room C104  
(970) 491-6141

Coordinated by the Department of Languages, Literatures and Cultures

The Russian Studies Interdisciplinary Minor is designed to give students in-depth knowledge of various aspects of Russian language, literature, culture, history and artistic expression, definable by the students’ own interests. Credits from study abroad programs will be appropriately evaluated and may be included as a valuable part of the overall program.

Contact the Department of Languages, Literatures and Cultures (http://languages.colostate.edu) for details.

**Effective Spring 2014**

Of the 21 minimum credits required for the interdisciplinary minor, at least 15 must be upper-division (300- to 400-level). At least 12 credits must be from the subject code LRUS.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required for each course counted toward the interdisciplinary minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Language Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select a minimum of 12 credits from the following courses. A minimum of 6 credits must be upper-division (300- to 400-level).</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>LRUS 105</td>
<td>First-Year Russian I</td>
<td></td>
</tr>
<tr>
<td>LRUS 107</td>
<td>First-Year Russian II</td>
<td></td>
</tr>
<tr>
<td>LRUS 200</td>
<td>Second-Year Russian I (GT-AH4)</td>
<td></td>
</tr>
<tr>
<td>LRUS 201</td>
<td>Second-Year Russian II (GT-AH4)</td>
<td></td>
</tr>
<tr>
<td>LRUS 250</td>
<td>Russian Language, Literature, Culture in Translation (GT-AH2)</td>
<td></td>
</tr>
<tr>
<td>LRUS 296</td>
<td>Group Study–Russian 1</td>
<td></td>
</tr>
<tr>
<td>LRUS 304</td>
<td>Third-Year Russian I</td>
<td></td>
</tr>
<tr>
<td>LRUS 305</td>
<td>Third-Year Russian II</td>
<td></td>
</tr>
<tr>
<td>LRUS 350</td>
<td>Russian Culture</td>
<td></td>
</tr>
<tr>
<td>LRUS 365</td>
<td>Introduction to Russian Cinema Studies</td>
<td></td>
</tr>
<tr>
<td>LRUS 495</td>
<td>Independent Study-Russian</td>
<td></td>
</tr>
<tr>
<td>LRUS 496</td>
<td>Group Study-Russian</td>
<td></td>
</tr>
</tbody>
</table>

**Upper-Division Selected Courses**

Select a minimum of 9 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 452</td>
<td>Masterpieces of European Literature</td>
<td></td>
</tr>
<tr>
<td>E 455</td>
<td>European Literature after 1900</td>
<td></td>
</tr>
<tr>
<td>ECON 376</td>
<td>Marxist Economic Thought</td>
<td></td>
</tr>
<tr>
<td>HIST 324</td>
<td>Imperial Russia</td>
<td></td>
</tr>
<tr>
<td>HIST 329</td>
<td>Europe in Crisis, 1914-1941</td>
<td></td>
</tr>
<tr>
<td>LGEN 465C</td>
<td>Studies in Foreign Film: Europe</td>
<td></td>
</tr>
<tr>
<td>POLS 345</td>
<td>Russian, Central, and East European Politics</td>
<td></td>
</tr>
<tr>
<td>POLS 371</td>
<td>U.S. Space Policy</td>
<td></td>
</tr>
</tbody>
</table>

**Sports Management Interdisciplinary Minor**

The Denver Broncos Sports Management Institute

- Interdisciplinary Minor Coordinator/Instructor  
- SLiCE Office, 8033 Campus Delivery  
- Fort Collins, CO 80523  
- Office: 970-491-1503  
- Lupe.Lemos-Sigward@colostate.edu

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETST 314</td>
<td>Inclusive Sports Organizations</td>
<td>3</td>
</tr>
<tr>
<td>IU 140</td>
<td>Foundations of Sport Management</td>
<td>2</td>
</tr>
<tr>
<td>IU 271</td>
<td>Leadership Styles II: Prominent Leaders</td>
<td>2</td>
</tr>
<tr>
<td>IU 486</td>
<td>Practicum for Interdisciplinary Leadership</td>
<td>3</td>
</tr>
<tr>
<td>IU 487</td>
<td>Internship for Interdisciplinary Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Select the appropriate course from the following: 3

Course may count toward the interdisciplinary minor with approval of minor advisor.

Students may petition to include up to 12 credits of coursework from outside the courses listed here. Courses must be from at least three different subject codes. To count toward the interdisciplinary minor, 30 percent or more of the course content should focus on Russia. Students must submit a syllabus for each course being petitioned to the Department of Languages, Literatures and Cultures and a brief description of individual work completed by the student for each proposed course. Courses from study abroad programs will be evaluated as part of the overall program.
Sustainable Water Interdisciplinary Minor

Office in Johnson Hall, Room 119
watercenter.colostate.edu (http://watercenter.colostate.edu)

Coordinated by the CSU Water Center and the Colorado Water Institute, in partnership with the School of Global Environmental Sustainability.

Water is a complex, interdisciplinary topic that is critical to our economic, societal, and environmental well-being. Issues surrounding water supply, water quality, and ecological relationships have become increasingly important in Colorado, the American West, and internationally as water demands increase. The complexity of these issues and competition among various water users demands that students interested in pursuing careers in water gain a broad introduction to the issues while specializing within a particular discipline. Colorado State University has developed considerable water resources expertise in many academic fields over the past century. The Sustainable Water Interdisciplinary Minor (SWIM) requires 21 credits and a minimum of 12 upper-division (300- to 400-level) courses which allow undergraduates to take advantage of this expertise and broaden their backgrounds regarding water resources in order to prepare for employment or graduate-level work.

Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREC 240/ ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td>9</td>
</tr>
<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
<td></td>
</tr>
<tr>
<td>GR 304/ WR 304</td>
<td>Sustainable Watersheds</td>
<td></td>
</tr>
</tbody>
</table>

FOUNDATIONS OF WATER

Select a minimum of 6 credits from the following Foundation course groups:

Select no more than one course from the following:

- BZ 104 Basic Concepts of Plant Life (GT-SC2)
- BZ 110 Principles of Animal Biology (GT-SC2)
- BZ 120 Principles of Plant Biology (GT-SC1)
- FW 204 Introduction to Fishery Biology
- LIFE 103 Biology of Organisms-Animals and Plants

Select no more than one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
<td></td>
</tr>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td></td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td></td>
</tr>
</tbody>
</table>

1 Registration for IU 486 and IU 487 depends on selection through a competitive application process. Consult the minor advisor. If student is not able to obtain a practicum or internship, they must take additional upper-division (300- to 400-level) credits from the Electives list.

2 Select enough credits from the Electives list to bring the program total to a minimum of 21 credits.
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 210/</td>
<td>Physical Geography</td>
</tr>
<tr>
<td>GR 210</td>
<td></td>
</tr>
<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
</tr>
<tr>
<td>Select no more than one course from the following:</td>
<td></td>
</tr>
<tr>
<td>ESS 211</td>
<td>Foundations in Ecosystem Science</td>
</tr>
<tr>
<td>ESS 311</td>
<td>Ecosystem Ecology</td>
</tr>
<tr>
<td>LAND 220/</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
</tr>
<tr>
<td>LIFE 220</td>
<td></td>
</tr>
<tr>
<td>LIFE 320</td>
<td>Ecology</td>
</tr>
<tr>
<td>Select no more than one course from the following:</td>
<td></td>
</tr>
<tr>
<td>GEOL 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
</tr>
<tr>
<td>GEOL 122</td>
<td>The Blue Planet: Geology of Our Environment (GT-SC2)</td>
</tr>
<tr>
<td>GEOL 124</td>
<td>Geology of Natural Resources (GT-SC2)</td>
</tr>
<tr>
<td>GEOL 150</td>
<td>Physical Geology for Scientists and Engineers</td>
</tr>
<tr>
<td>Select no more than one course from the following:</td>
<td></td>
</tr>
<tr>
<td>PH 110</td>
<td>Descriptive Physics (GT-SC2)</td>
</tr>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
</tr>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
</tr>
<tr>
<td>CONTEXTS OF WATER 1</td>
<td></td>
</tr>
<tr>
<td>Select a minimum of 6 credits from the following Context courses:</td>
<td></td>
</tr>
<tr>
<td>Sociological-Economic Context</td>
<td></td>
</tr>
<tr>
<td>AGRI 270/</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
</tr>
<tr>
<td>IE 270</td>
<td>Food (GT-SS3)</td>
</tr>
<tr>
<td>AREC 341</td>
<td>Environment Economics</td>
</tr>
<tr>
<td>CON 476</td>
<td>Sustainable Practice-Design and Construction 2</td>
</tr>
<tr>
<td>E 339</td>
<td>Literature of the Earth</td>
</tr>
<tr>
<td>GES 101</td>
<td>Foundations of Environmental Sustainability</td>
</tr>
<tr>
<td>JTC 461</td>
<td>Writing About Science, Health, and Environment</td>
</tr>
<tr>
<td>NR 320</td>
<td>Natural Resources History and Policy</td>
</tr>
<tr>
<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
</tr>
<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
</tr>
<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
</tr>
<tr>
<td>SOC 323</td>
<td>Sociology of Environmental Governance</td>
</tr>
<tr>
<td>SOC 461</td>
<td>Water, Society, and Environment</td>
</tr>
<tr>
<td>Ecological-Biological Context</td>
<td></td>
</tr>
<tr>
<td>BZ 321</td>
<td>Aquatic Vascular Plants</td>
</tr>
<tr>
<td>BZ 415</td>
<td>Marine Biology</td>
</tr>
<tr>
<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
</tr>
<tr>
<td>BZ 474</td>
<td>Limnology</td>
</tr>
<tr>
<td>ERHS 320</td>
<td>Environmental Health - Water and Food Safety</td>
</tr>
<tr>
<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
</tr>
<tr>
<td>FW 400</td>
<td>Conservation of Fish in Aquatic Ecosystems</td>
</tr>
<tr>
<td>HORT 368/</td>
<td>Landscape Irrigation and Water Conservation</td>
</tr>
<tr>
<td>LAND 368</td>
<td></td>
</tr>
<tr>
<td>Physical Context</td>
<td></td>
</tr>
<tr>
<td>ATS 150</td>
<td>Science of Global Climate Change</td>
</tr>
<tr>
<td>CIVE 322</td>
<td>Basic Hydrology</td>
</tr>
<tr>
<td>CIVE 330</td>
<td>Ecological Engineering</td>
</tr>
<tr>
<td>CIVE 413</td>
<td>Environmental River Mechanics</td>
</tr>
<tr>
<td>CIVE 423</td>
<td>Groundwater Engineering</td>
</tr>
<tr>
<td>CIVE 440</td>
<td>Nonpoint Source Pollution</td>
</tr>
<tr>
<td>GEOL 452</td>
<td>Hydrogeology</td>
</tr>
<tr>
<td>SOCR 370</td>
<td>Irrigation Principles</td>
</tr>
<tr>
<td>SOCR 371</td>
<td>Irrigation of Field Crops</td>
</tr>
<tr>
<td>WR 406</td>
<td>Seasonal Snow Environments</td>
</tr>
<tr>
<td>WR 416</td>
<td>Land Use Hydrology</td>
</tr>
<tr>
<td>WR 418</td>
<td>Land Use and Water Quality</td>
</tr>
<tr>
<td>WR 474</td>
<td>Snow Hydrology</td>
</tr>
<tr>
<td>Total Credits 21</td>
<td></td>
</tr>
</tbody>
</table>

1 No more than 4 credits per subject code may be counted toward the Contexts of Water requirement.
2 Enrollment in CON 476 is limited to Construction Management majors only.

Systems Engineering Graduate Interdisciplinary Studies Program

Office in Engineering Building, Room AR204

Coordinated by a Faculty Advisory Board and the College of Engineering

The Systems Engineering interdisciplinary studies program is designed to address the current trend toward increasingly complex systems that exists across a variety of disciplines, including aerospace, energy, environment, and biosciences. The objective of the program is to expose engineers and industry professionals to a disciplined development process in order to manage complex engineered systems and produce quality and reasonably priced products.

The program is open to graduate students and professionals who hold a B.S. degree. Coursework in calculus and statistics (or the ability to apply statistical methods) is also required.

The program is offered through the College of Engineering and is 12 credit hours.

Effective Spring 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Courses</td>
</tr>
<tr>
<td></td>
<td>Select one from the following:</td>
</tr>
<tr>
<td></td>
<td>CIS 600 Information Technology and Project Management</td>
</tr>
<tr>
<td></td>
<td>CIS 670 Advanced IT Project Management</td>
</tr>
<tr>
<td></td>
<td>MECH 501 Engineering Project and Program Management</td>
</tr>
<tr>
<td>ENGR 501</td>
<td>Foundations of Systems Engineering 3</td>
</tr>
<tr>
<td>ENGR 530</td>
<td>Overview of Systems Engineering Processes 3</td>
</tr>
<tr>
<td>ENGR 531</td>
<td>Engineering Risk Analysis 3</td>
</tr>
</tbody>
</table>
Women's Study Interdisciplinary Minor

Eddy Hall, Room 210
(970) 491-6182
womensstudies.colostate.edu

Coordinated by Dr. Caridad Souza, Director, Center for Women's Studies and Gender Research

The Women's Study Interdisciplinary Minor prepares individuals for the needs and opportunities of a changing world by building awareness of the range of human experience, potential, and accomplishment that place women and gender at the center of inquiry. Women's studies transform disciplinary assumptions and theories, create innovative models for teaching and research, and develop practices for challenging systems of power and privilege.

Learning Outcomes

Upon completion of the program of study, students will demonstrate:

- Knowledge of academic disciplines from feminist and intersectional perspectives
- An understanding of the historic and contemporary contributions of women of all cultures
- Effective oral communication, writing, and research skills
- An increase in critical thinking, intellectual, and personal growth
- A critical ideological understanding regarding women and gender implicit in social institutions and structures

Potential Occupations

Contemporary career opportunities can be directly enhanced by students who have a women's studies background. Students acquire jobs in the non-profit sector, such as international relief agencies, domestic violence agencies, homeless shelters, after school programs, and children and family services. Other fields our students have entered include public relations, counseling, union organizing, public policy and research, victim advocacy, and human/civil rights. In several areas such as journalism, communication, business, law, education, and human services, it is now common to choose a career that has a direct focus on women and gender.

In areas that have not traditionally focused on women and gender, an awareness of the history and culture of feminisms, women and the intersections of gender, race, class, and sexism can enhance a person’s ability to cope with dilemmas and issues related to gender and sex that arise in the workplace. In addition, students in women's studies have the unique opportunity to apply insights from course work to their own lives, helping them make more informed choices about careers, education, relationships, and community participation.

Students interested in pursuing the Women's Study Interdisciplinary Minor should contact the Center for Women's Studies and Gender Research (http://womensstudies.colostate.edu). Completion of requirements will be noted on the student's permanent record.

Effective Spring 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students enrolled in the undergraduate Women's Study Interdisciplinary Minor are required to earn a grade of C (2.000) or better in each course completed for undergraduate minor credit.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETST 405</td>
<td>Ethnicity, Class, and Gender in the U.S.</td>
<td>3</td>
</tr>
<tr>
<td>WS 200</td>
<td>Introduction to Women's Studies</td>
<td>3</td>
</tr>
<tr>
<td>WS 472</td>
<td>Seminar in Women's Studies-Social Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>

Intersectionality of Race, Sexuality and Gender

Select one of the following courses:

- ANTH 338 Gender and Anthropology
- ETST 254 La Chicana in Society
- ETST 300 Queer Studies and Women of Color
- ETST 352/ SOWK 352 Indigenous Women, Children, and Tribes
- ETST 411 Black Feminism(s)
- ETST 413 Queer Creative Expressions

Elective Courses

Select 9 credits from the following courses:

- AM 550 Appearance, Self, and Society
- ANTH 338 Gender and Anthropology
- ANTH 520 Women, Health, and Culture
- E 330 Gender in World Literature
- E 331 Early Women Writers
- E 332 Modern Women Writers
- ECON 211 Gender in the Economy (GT-SS1)
- ETST 254 La Chicana in Society
- ETST 300 Queer Studies and Women of Color
- ETST 352/ SOWK 352 Indigenous Women, Children, and Tribes
- ETST 411 Black Feminism(s)
- ETST 413 Queer Creative Expressions
- HIST 320 Women and Gender in Europe, 1450-1789
- HIST 358 American Women's History to 1800
- HIST 359 American Women's History Since 1800
- IE 470 Women and Development
- PHIL 353 Feminist Philosophies
- PSY 327 Psychology of Women
- PSY 437 Psychology of Gender
- SOC 450 Gender, Crime, and Criminal Justice
- SPCM 335 Gender and Communication
- WS 397 Group Study
- WS 495 Independent Study

Total Credits 21
Women's Study Interdisciplinary Studies Program

Eddy Hall, Room 210
(970) 491-6182
womensstudies.colostate.edu

Coordinated by the Director of the Center for Women's Studies and Gender Research

The graduate level Women's Study Interdisciplinary Studies program will be discontinued effective Spring 2018. Students in the Women's Study Interdisciplinary Studies program should contact the director of the Center for Women's Studies and Gender Research (http://womensstudies.colostate.edu).

No new students are being accepted. Students interested in this field of study should contact the department for more information regarding a new graduate certificate in Gender, Power and Difference, pending final approval for accepting students in Spring 2017.

The Women's Study interdisciplinary studies programs prepare individuals for the needs and opportunities of an increasingly interconnected and interdependent world. The graduate-level program in Women's Study is for students who for professional and/or personal reasons wish to supplement their graduate programs of study. At the graduate level, the program presumes a background in Women's Studies courses or substantial work, paid or volunteer, in a Women's Studies applied area of work or service. The Women's Study interdisciplinary studies programs uniquely fills CSU's central mission and contributes to intersectional, interpersonal, intercultural, and international understandings. Women's studies transform traditional disciplinary assumptions and theories, creates innovative models for teaching and research, and develops practices for challenging systems of power and privilege.

Learning Outcomes

Upon completion of the program of study, students will demonstrate:

- Knowledge of academic disciplines from feminist and intersectional perspectives
- An understanding of the historic and contemporary contributions of women of all cultures
- Effective oral communication, writing, and research skills
- An increase in critical thinking, intellectual, and personal growth
- A critical ideological understanding regarding women and gender implicit in social institutions

Potential Occupations

Contemporary career opportunities can be directly enhanced by students who have a women's studies background. Students acquire jobs in the non-profit sector, such as international relief agencies, domestic violence agencies, homeless shelters, after school programs, and children and family services. Other fields our students have entered include public relations, counseling, union organizing, public policy and research, victim advocacy, and human/civil rights. In several areas such as journalism, communication, business, law, education, and human services, it is now common to choose a career that has a direct focus on women and gender.

In areas that have not traditionally focused on women and gender, an awareness of the history and culture of feminism, women and the intersections of gender, race, class, and sexism can enhance a person's ability to cope with dilemmas and issues related to gender and sex that arise in the workplace. In addition, students in women's studies have the unique opportunity to apply insights from course work to their own lives, helping them to make more informed choices about careers, education, relationships, and community participation.

Division of Armed Forces Services

- Department of Aerospace Studies
- Department of Military Science

Reserve Officers’ Training Corps (ROTC)

History

An Act of Congress dated July 2, 1862, provided for military science and tactics instruction in federal land-grant colleges. Such instruction has been given at Colorado State University since its establishment.

In 1919, the Department of Military Science and Tactics of the institution was included in the Reserve Officers’ Training Corps under the provisions of the First National Defense Act, July 3, 1916. The ROTC Vitalization Act of 1964 provides for a two-year ROTC program in addition to the traditional four-year program and authorizes ROTC scholarships.

General Information

The Army and Air Force four-year programs complement the four college years and include one summer encampment. Students satisfactorily completing Army or Air Force departmental requirements will be commissioned as second lieutenants in the Army or Air Force.

Additionally, each service offers a two-year program whereby a student may earn a commission after completing two years of ROTC training during the junior and senior undergraduate years or during a two-year graduate degree program. This program is designed for transfer students or students unable to take ROTC training during their freshman and sophomore years.

Each student entering the junior year (freshman or sophomore year if a scholarship recipient) of ROTC enlists in the Army or Air Force Reserve and signs a contract. This contract includes a military service commitment and obligates the student to complete the junior and senior year ROTC courses, and to accept a commission as a second lieutenant. All contracted cadets receive a tax-free stipend of $300-$500 per month, incremented by academic year.

Some graduates defer active duty until the attainment of graduate degrees. Opportunities also exist for graduate study while on active duty. Active duty officers may be selected for enrollment at civilian universities in graduate degree programs. When selected, such study is accomplished with full pay and allowances for an officer.
Purpose
The purpose of the Army and Air Force ROTC courses is to develop leadership capabilities, to provide expertise in organizational skills, and to qualify students for duty as officers with the Armed Forces of the United States. The courses are designed to develop self-confidence, initiative, leadership skills, critical thinking skills, and a sense of duty and honor as a citizen and potential future officer.

College Scholarship Program
Scholarships are available to qualifying students entering or enrolled in the University Air Force or Army ROTC programs. Scholarship consideration is predicated on student ability, performance, and potential. In order to accept the scholarship, if offered, the student must enroll in ROTC, be medically qualified for military service, pass a physical fitness test, and take an oath to defend the constitution of the United States. These ROTC scholarships may provide payment of up to full tuition (resident and non-resident), laboratory expenses, mandatory fees, a textbook allowance of $900 (Air Force) and $1,200 (Army) per year, and a tax free stipend of $300-$500 per month, depending on academic year.

Details of the scholarship program may be obtained online through the Air Force (http://afrotc.com) and Army (http://goarmy.com), and from the ROTC department concerned. Refer to the following sections for names of persons who can supply additional information.

Department of Aerospace Studies
Office in Military Science Building, Room 204A
(970) 491-6476
airforce.colostate.edu (http://airforce.colostate.edu)
afrotc.com (http://afrotc.com)

Colonel Kip B. Turain, USAF, Professor of Aerospace Studies

Air Force ROTC
The mission of the Air Force ROTC program is to develop and produce quality leaders for the Air Force. Enrollment is open to any student attending the University on a full-time basis. The curriculum provides the individual with a firm understanding of the concepts of aerospace power and the Air Force mission, organization, and operation.

Enrollment in AFROTC is voluntary and accomplished through the fall and spring registration periods. Scholarships are available in many academic disciplines on a competitive basis. Approximately one-half of the students hold scholarships. Depending on the semester, approximately one-quarter of the cadet corps consists of women. Almost all Air Force career fields are open to women, including pilot positions.

General Program
The four-year program consists of the General Military Course (GMC) during the freshman and sophomore years and the Professional Officer Course (POC) for the remaining two years of college. Enrolled students are referred to as cadets. Compressed options may be available for students starting after their freshman year. Four-year cadets participate in a four-week field training period during the summer between their sophomore and junior years. Students may enroll in the Aerospace Studies courses for credit or to earn a minor; however, they are not considered members of Air Force ROTC.

Scholarships
Air Force ROTC offers college students scholarships to pay for up to $18,000 tuition, most fees, and $600 per year for books. In addition, all cadets on scholarship receive a nontaxable monthly allowance during the academic year. Currently, the monthly amount is $300 for freshmen increasing each year up to $500 for seniors. The program is open to college freshmen and sophomores in any major.

Summer Programs
Air Force ROTC offers many summer programs to take advantage of. Before completing the ROTC program all cadets must complete field training, which is a rigorous four-week program involving physical conditioning, weapons training, and survival training. But more than that, field training is an opportunity to develop your skills as both a leader and team member. In addition to field training, cadets may choose to participate in other experiences and you will be able to tell your friends that you did something truly amazing. These summer programs include: freefall parachuting, advanced engineering, NASA research, nurse orientation, cultural and language immersion programs, and several others. In addition to the experience of a lifetime, you will receive travel to and from the location, room and board, and daily training pay.

Active Duty Obligation
There is no active duty obligation for enrolling in either the freshman or sophomore AFROTC courses. Cadets who complete the Air Force ROTC program and receive a commission incur a minimum four-year, active duty commitment. Pilots, Combat System Operators, and Air Battle Managers serve additional commitments from the time they complete their training.

Requirements
Minor in Aerospace Studies
The minor in aerospace studies is offered to any student completing the course of study listed below. In addition to studying Air Force organizations, missions, and operations, the student will gain a broad perspective of the military in general by studying the history of all Department of Defense Services and completing at least one Army ROTC course, thus emphasizing our country’s focus on “joint” military operations.

Additional coursework may be required due to prerequisites.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 101</td>
<td>Foundations of the Air Force I</td>
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</tr>
<tr>
<td>AS 102</td>
<td>Foundations of the Air Force II</td>
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</tr>
<tr>
<td>AS 201</td>
<td>Evolution of Air and Space Power I</td>
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<tr>
<td></td>
<td>MLSC 102 Introduction to Tactical Leadership</td>
<td></td>
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<tr>
<td></td>
<td>MLSC 201 Innovative Team Leadership</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MLSC 202 Foundations of Tactical Leadership</td>
<td></td>
</tr>
</tbody>
</table>
Students can also receive the GI Bill and tuition assistance benefits while in Army ROTC.

The Military Science curriculum is intended to enrich and supplement baccalaureate or postgraduate studies in all fields. The Army recognizes the need for officers with varied academic credentials and will award a commission to students who successfully complete ROTC.

**Flight Training**

After commissioning, flight training is available, although competitive, to those officers who have taken and passed the flight physical and flight aptitude test and have been selected for service within the Aviation Branch. The test is normally administered during the MS III or junior year of ROTC. Training will be rotary wing (helicopter) training.

**Scholarships**

Colorado State Army ROTC scholarship students may be awarded scholarships that pay full tuition (in-state or out-of-state), mandatory fees, $1,200 per year for books and a graduated stipend (living allowance) of $300 per month up to a maximum of $500 per month. Applications for the four-year scholarship can be requested by calling 1-800-USA-ROTC or applying online (http://www.armyrotc.colostate.edu/Prospective/Scholarships.aspx). Two- and three-year scholarships for sophomores and freshmen, respectively, may be applied for throughout the school year directly through the on-campus Army ROTC Program.

**Financial Assistance Opportunities**

In addition to two-, three-, and four-year scholarships, Army ROTC has the Simultaneous Membership Program (SMP), which provides additional experience and financial assistance from two sources: a National Guard or Reserve unit and Army ROTC. SMP students may also qualify for GI Bill benefits, loan repayment money, and up to 100% tuition assistance money, based on available funding and service time.

**Requirements**

**Minor in Military Science**

ROTC students can earn a minor in Military Science. The minor requires 27 credits, which encompass approximately 87% of the military science courses, a military history course, and summer training. This minor allows ROTC students to compete in the University Honors Program or complete majors that also require a minor.

**Effective Spring 2015**

In order to receive a minor in Military Science, students must commission as 2nd Lieutenants in the U.S. Army upon graduation from CSU.

<table>
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<tr>
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<td>MLSC 102</td>
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<td>MLSC 201</td>
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<td>MLSC 202</td>
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</tr>
<tr>
<td>MLSC 250</td>
<td>Basic Camp Leader Internship</td>
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<td>Credit awarded for prior military service</td>
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<td>Upper-Division</td>
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<tr>
<td>MLSC 301</td>
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</table>

**Department of Military Science**

The Army ROTC program provides professional education and leadership training to those students who desire to serve our country as officers in the U.S. Army upon graduation. Successful completion of the program qualifies ROTC cadets for both a commission as a second lieutenant in the Army and an opportunity to serve at least four years on active duty or at least six years in the reserve component (Army Reserve or Army National Guard).

The successful ROTC cadet may choose one of the 16 diverse and exciting career fields in which to serve as an Army officer. A list of these career fields may be obtained from the Department of Military Science.

**General Program**

The Military Science Program is subdivided into two levels. The basic course is aligned with the freshman and sophomore years and consists of the fundamentals of leadership and management, land navigation, small unit operations, survival, and rappelling. The advanced course is aligned with the junior and senior years and covers leadership assessment, military history, ethics, and professionalism. It also includes leadership skills that prepare the cadet for entry into active or reserve duty as a commissioned officer. Participation in leadership laboratories is open to all students who are enrolled in a military science class.

**Two-Year and Graduate Degree Programs**

A two-year program is also available for students who have not taken the first two years of ROTC or those who have completed an undergraduate degree and are seeking a two-year graduate program. This program requires the student to attend a summer course at Fort Knox, Kentucky, or have completed basic training from prior enlisted service, between the sophomore and junior years or prior to starting a graduate degree program. This four-week course consists of basic military training and allows the student to enter the advanced course upon return to campus.

Another option to attain an officer’s commission is through the Simultaneous Membership Program (SMP). This program allows a cadet who is a member of an Army Reserve or Army National Guard unit to be in the advanced course of ROTC, be paid at the cadet drill pay rate (equivalent to E-5 pay), work as an officer trainee in their unit, and compete for an Army reserve component or active duty commission.
Some examples of the many areas in environmental studies at CSU are: agricultural business; air pollution assessment and management; air quality; biological control and pest management; global climate change; biodiversity and conservation biology; biomedical engineering; ecology and ecosystem management; ecotourism; ecotoxicology; environmental communication; environmental engineering; environmental ethics; environmental history and policy analysis; environmental horticulture; environmental soil science; environmental geology, land ethics, and stewardship; environmental sociology; natural resource economics; natural resources and environmental management; natural resource tourism; occupational health and workplace management/control; park and protected areas management; pesticide management; pollution control; reproductive and environmental risk factors; risk assessment and management; solid and hazardous waste management; sustainable building design and construction; and water chemistry, quality, and management.

The programs at CSU that engage in environmental studies are incorporated within existing majors in the following colleges (departments): College of Agricultural Sciences (Agricultural and Resource Economics; Bioagricultural Sciences and Pest Management) (graduate only); Horticulture and Landscape Architecture; Soil and Crop Sciences; College of Health and Human Sciences (Construction Management); College of Engineering (Atmospheric Science) (graduate only); Chemical and Biological Engineering; Civil and Environmental Engineering; Mechanical Engineering; College of Liberal Arts (Anthropology; English; History; Philosophy; Political Science; Sociology); Warner College of Natural Resources (Fish, Wildlife, and Conservation Biology; Ecosystem Science and Sustainability; Forest and Rangeland Stewardship; Geosciences; Human Dimension of Natural Resources; Natural Resource Ecology Laboratory); College of Natural Sciences (Biology; Biochemistry and Molecular Biology; Chemistry; Physics; Psychology); College of Veterinary Medicine and Biomedical Sciences (Biomedical Sciences; Environmental and Radiological Health Sciences; Microbiology, Immunology, and Pathology). In addition, CSU offers an Environmental Affairs Interdisciplinary Studies Program and an Undeclared Environmental/Natural Resource Interest for students who first wish to explore options with environmental studies campus-wide before selecting a major (contact the Warner College of Natural Resources for more information on the undeclared option). For further information about specific environmental studies-focused majors, please contact the respective college/department and see their program descriptions within this catalog.

Environmental Studies

The broad spectrum of environmental studies at CSU is uniquely dispersed in 100 majors and concentrations housed in departments throughout CSU. As a land-grant institution, a key component of CSU's mission is to provide education in environmental management, science, and policy. It is difficult to find a degree or department that does not directly address environmental issues at local, national, and international scales. Campus-wide participation in environmental science and management is a result of fundamental linkages between basic science and management of critical environmental issues. Consequently, a unique strength of CSU is a tradition of interdisciplinary research, teaching, and service, which is essential in understanding the environmental issues of today's world.

Programs engaged in environmental studies at CSU have goals that include:

- Understanding that scientific knowledge, policy considerations, and ethical issues are necessarily joined;
- Comprehending the interrelationships among the environment, natural resources, and human society;
- Perceiving the need to integrate diverse social, political, legal, institutional, and scientific considerations inherent in attaining environmental goals;
- Educating students to be articulate, sensitive, and knowledgeable about the complexity of environmental issues facing society;
- Providing a balanced understanding of the natural and social processes as they relate to the environment.

Some examples of the many areas in environmental studies at CSU are: agricultural business; air pollution assessment and management; air quality; biological control and pest management; global climate change; biodiversity and conservation biology; biomedical engineering; ecology and ecosystem management; ecotourism; ecotoxicology; environmental communication; environmental engineering; environmental ethics; environmental history and policy analysis; environmental horticulture; environmental soil science; environmental geology, land ethics, and stewardship; environmental sociology; natural resource economics; natural resources and environmental management; natural resource tourism; occupational health and workplace management/control; park and protected areas management; pesticide management; pollution control; reproductive and environmental risk factors; risk assessment and management; solid and hazardous waste management; sustainable building design and construction; and water chemistry, quality, and management.

School of Global Environmental Sustainability (SoGES)

Office in Johnson Hall, Room 108
(970) 491-4070

The School of Global Environmental Sustainability (http://sustainability.colostate.edu) (SoGES) seeks to prepare students to meet today's pressing environmental challenges. Using an interdisciplinary approach within a framework of sustainability, students will be led in innovative research leading to the knowledge and understanding needed to approach and solve problems of the human-environment interaction. SoGES’ vision encompasses laying the foundation and defining the principles and practices that will ensure long-term environmental sustainability, while continuing to meet the needs of people around the earth.

Mentored Research and Artistry Program

Office in the TILT Office for Undergraduate Research and Artistry
To complete the program, the following requirements must be satisfied.

1. Inquiry projects must be conducted under the guidance of a faculty, staff, or industry mentor for a minimum duration of two semesters. Approval of projects by the Office for Undergraduate Research and Artistry is required. Forms and guidelines for program registration are available at TILT (http://tilt.colostate.edu/oura).

2. Participating students must complete a workshop on the Responsible Conduct of Research (http://rcr.colostate.edu) (RCR), provided regularly by the Office for Undergraduate Research and Artistry. Upon completion of the RCR workshop, participants are required to complete the online RCR training and examination module available at RCR (http://rcr.colostate.edu). Students must register and actively participate in a student organization related to their discipline and approved by the Office for Undergraduate Research and Artistry. Students will be required to submit a letter from the organization’s Faculty/Graduate advisor verifying the student’s active involvement for at least two semesters.

3. Students must complete a research methods course with a grade of C or higher. The course must be approved by the Office for Undergraduate Research and Artistry.

4. Inquiry projects must be presented at CSU’s annual Celebrate Undergraduate Research and Creativity (CURC) Showcase or another venue approved by the Office for Undergraduate Research and Artistry, such as a regional or national conference. A program highlighting the participant’s project or a letter of verification from the faculty mentor must be included with the final report.

5. Projects must be submitted for publication in the CSU’s Journal of Undergraduate Research and Scholarly Excellence or in another peer-reviewed journal, approved by the Office for Undergraduate Research and Artistry. A copy of the published manuscript or correspondence from an editor of the journal to which a manuscript has been submitted indicating the manuscript is under review should be included with the participant’s final report.

Upon completion of a project, participants must submit a final report including a summary of the project, its outcomes, and a detailed reflection of the experience along with a letter from the mentor (report forms and guidelines are available at TILT (http://tilt.colostate.edu/oura)). The Office for Undergraduate Research and Artistry will generate an electronic file for each participant. Upon submission of the final report, the Office for Undergraduate Research and Artistry will review the file and confirm the student’s successful completion of the program notifying the CSU Registrar’s Office for transcription of the Mentored Research and Artistry Program.

Program Background
The faculty, staff, and students at CSU are actively engaged in a wide range of scholarly activities that both anticipate and respond to the interests and needs of the people of Colorado, the nation, and the world. In these endeavors, we are recognized as one of the most highly rated public research universities in the United States. Faculty, staff, and students at CSU are pioneers in a variety of disciplines that help shape our global environment. The Mentored Research and Artistry Program provides a structure for undergraduate students to engage in these activities. Whether investigating infectious disease or the benefits of music therapy, international economics, or regional climate change, every undergraduate is encouraged to contribute to the scholarly output of CSU.

Program Philosophy
Aristotle noted, “For the things we have to learn before we can do them, we learn by doing them.” The development and application of new knowledge plays an essential role at research-intensive universities, enhancing both learning and teaching. The Mentored Research and Artistry Program allows students to initiate a learning experience under the close guidance of a faculty mentor. Research and artistry, as an extension of the learning experience beyond the classroom, leads to the acquisition of skills and unique mindsets necessary to create new ideas and expand human knowledge. Through inquiry, students become their own teachers pursuing answers to unresolved questions and enriching their educational experience. For example, a student may use techniques learned in a chemical engineering laboratory to explore alternatives for clean energy. Another student might expand the technical repertoire of acrylic painting in the context of experimenting on canvas. In all cases, each student’s path to new knowledge is enhanced with the guidance and experience of a mentor. The role of faculty mentors in undergraduate inquiry is to provide input, feedback, and support while guiding students in the responsible and ethical pursuit of new knowledge and experiences.

Main Features
The Mentored Research and Artistry Program is designed to enhance and recognize the learning experiences of undergraduates who are engaged in research, artistry, or other forms of creative work. The experience allows students to distinguish themselves as undergraduate scholars in their disciplines. This opportunity is open to all undergraduate students in good academic standing who have at least two full semesters remaining before graduation. The criteria for completion of the program are rigorous, ensuring that only the most dedicated students receive the distinction of Mentored Research and Artistry Program on their transcript. Students earn the right to wear the Mentored Research and Artistry Program’s Silver Ribbon with their graduation regalia and of listing this distinction among their academic achievements.

Requirements
To complete the program, the following requirements must be satisfied.

1. Inquiry projects must be conducted under the guidance of a faculty, staff, or industry mentor for a minimum duration of two semesters. Approval of projects by the Office for Undergraduate Research and Artistry is required. Forms and guidelines for program registration are available at TILT (http://tilt.colostate.edu/oura).

University Honors Program
Office in Academic Village, B 102
(970) 491-5679
honors.colostate.edu (http://honors.colostate.edu)

Program Philosophy
The University Honors Program, established in 1957, is a special learning community that offers extraordinary students a wide range of enriching educational experiences. Hallmarks of the program include small classes and interdisciplinary seminars taught by some of the University’s finest teachers, individualized academic advising, faculty-mentored research and other creative activities, an optional residential learning community in the Academic Village, early registration for classes, co-curricular activities, a scholarship for students who enter the program in the freshman year, and assistance with applications for prestigious post-graduate awards. Approximately 1,500 students participate in the program where they receive a world class education, enjoy the personalized attention typically found at a small college, and benefit from the resources and diversity of a nationally acclaimed research university.
Main Features

University Honors Core Curriculum. Two curricular options provide enriched educational experiences for high ability students in all majors. The Track 1 curriculum, designed for entering first-year students is composed of five Honors seminars, two Honors courses in the major, and a faculty-mentored senior year creative activity (thesis). Completing Track 1 fulfills five of the categories in Colorado State University's All University Core Curriculum, as well as the oral communications requirement in most majors that require a speech class. Participating in the Honors program provides for a more enriched and rewarding education without extending the time to graduation.

The Track 2 curriculum, designed for continuing or transfer students, is composed of one to two honors seminars, five or six Honors courses (15-18 credits) in the major and a faculty-mentored senior year creative activity (thesis). Students who have completed 15+ credits at college level and have a 3.5 cumulative grade point average are eligible to apply. Entering first-year students who transfer 30+ credits that already satisfy many AUCC categories through AP, IB, or college courses are eligible for Track 2.

Graduating as a University Honors Scholar. Students who complete the Honors requirements and achieve at least a 3.5 cumulative grade point average earn the prestigious designation of University Honors Scholar. Scholars are recognized at graduation, and the University Honors Scholar designation appears on their diplomas and transcripts. For more information on graduation as a University Honors Scholar, see the section on Scholastic Standards.

Admission to the Program. The application and selection process, which targets high school seniors and transfer students, is designed to attract an Honors class that represents high academic achievement, diversity of life experiences, and great promise for contributing to the Honors and University communities. Typically, 390 first-year students enroll in the Honors Program each year. Currently enrolled CSU students may also apply to the University Honors Program after their first semester of college, and high-achieving transfer students are invited to apply.

The Honors Residential Learning Community. The optional Honors Residential Learning Community (HRLC) is located in the Academic Village and in Edwards Residence Hall. It links in-class and out-of-class student learning through residence life experiences and special programs. Students, especially first-year students, are encouraged to take advantage of this special opportunity. The HRLC is home to the Honors Office and classrooms that are used for seminars, special lectures, study sessions, and a wide variety of co-curricular activities. The 24/7 Fireside Lounge is located near the Program Office in the Academic Village.

The Honors Merit Scholarship. All new freshmen who have been admitted to, confirm to the program, and participate in the University Honors program receive a renewable scholarship. Students who remain in good standing with the University Honors Program and meet the minimum GPA requirement for continuation of the honors merit scholarship will receive the scholarship for four years. Students entering their senior year are also invited to apply for additional donor-funded scholarships, and all honors students are encouraged to apply for Honors Enrichment Awards and Thesis Improvement Grants to supplement their educational activities.

Requirements

University Honors Core Curricula

The Honors program of study provides exceptional academic studies that include breadth and perspectives, in-depth studies, a senior year creative activity, and Honors elective courses. Two curricular pathways provide enriched educational experiences for high ability students in all majors. The Entering Student Pathway curriculum fulfills nearly half of the All-University Core Curriculum (AUCC) requirements, allowing Honors students to graduate on schedule and without additional cost. The Continuing/Transfer Student Pathway curriculum satisfies Honors requirements by taking Honors courses in their majors and departments. Students who complete either curriculum and graduate with a cumulative 3.5 GPA or greater receive "University Honors Scholar" designation on their diploma and transcripts.

The Honors courses enroll between 18 and 22 students and are taught by some of the University's finest teachers.

Honors Entering Student Pathway (2 Options)

Effective Fall 2015

Option 1

Freshman

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<th>Credits</th>
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Sophomore

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1 Sophomore-level Honors course in the student’s major, department, and/or college.

2 Upper-division Honors course in the student’s major, department, and/or college.

Students completing the Honors Core Curriculum will fulfill the All-University Core Curriculum (AUCC) core competency requirements in the following categories: 1A – Intermediate Writing; three credits of the six required for 3B – Arts and Humanities; 3C – Social and Behavioral Sciences; 3D – Historical Perspectives; 3E – Global and Cultural Awareness. Students completing some, but not all, of the program will fulfill some of the AUCC core competencies. Complete details are available from the Honors Program office.

**Option 2**

Option 2 is available only to entering students with >30 transfer credits.

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>HONR 192</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Honors First Year Seminar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Sophomore</td>
<td>Select one course from the following:</td>
<td></td>
<td>3</td>
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<tr>
<td></td>
<td>HONR 292</td>
<td>Honors Seminar—Knowing in Arts and Humanities (GT–AH2)</td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td>HONR 293</td>
<td>Honors Seminar—Knowing Across Cultures (GT–SS3)</td>
<td>3E</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td>HONR 399</td>
<td>Pre-thesis</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Honors courses in the major&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Senior</td>
<td>HONR 499</td>
<td>Senior Honors Thesis</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Honors courses in the major&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Program Total Credits:</td>
<td></td>
<td>26</td>
</tr>
</tbody>
</table>

Students may take an Honors course in the major and/or enroll in elective Honors courses in their first year on campus.

1 Fifteen honors credits (sophomore, upper-division [300- to 400-level], graduate level, etc.) in the major or discipline; not more than 3 credits at the sophomore level; not more than 3 credits may be outside of major or discipline.
Honors Continuing/Transfer Student Pathway
Effective Fall 2015

The Continuing/Transfer Student Pathway is available only to students with >15 college credits taken after admission to CSU.

Junior

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HONR 292</td>
<td>Honors Seminar—Knowing in Arts and Humanities (GT–AH2)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>HONR 293</td>
<td>Honors Seminar—Knowing Across Cultures (GT–SS3)</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>HONR 399</td>
<td>Pre-thesis</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Honors courses in the major 1 9

Total Credits 13

Senior

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HONR 499</td>
<td>Senior Honors Thesis</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Honors courses in the major 1 9

Total Credits 12

Program Total Credits: 25

Students may take an Honors course in the major and/or enroll in elective Honors courses in their first year on campus.

1 Eighteen honors credits (sophomore [200-level], upper-division [300- to 400-level], graduate [500-level], etc.) in the major or discipline; not more than 3 credits at the sophomore level; not more than 3 credits may be outside of major or discipline.

Peace Corps Master's International Programs

Office of International Programs – Laurel Hall
(970) 491-5917

The Peace Corps Master’s International Program (http://international-initiatives.colostate.edu) offers the unique opportunity to pair graduate studies with volunteer service abroad. Participants earn a degree from CSU while advancing the skills and education needed to serve successfully abroad. Programs are offered within the Warner College of Natural Resources (http://warnercnr.colostate.edu), College of Agricultural Sciences (http://agsci.colostate.edu), Department of English (http://english.colostate.edu), Department of Food Science and Human Nutrition (http://www.fshn.chhs.colostate.edu), and the Colorado School of Public Health at CSU (http://www.publichealth.colostate.edu). Prospective students must apply to a participating CSU graduate program and to the Peace Corps (http://www.peacecorps.gov).

Peace Corps Master’s International students take approximately three semesters of coursework on campus, serve 27 months in a Peace Corps host country, and return to campus to complete a professional paper or portfolio. Graduates will develop a broader worldview and the skills and education needed to contribute to domestic and international community development.

For more information, contact your program of interest.

College of Agricultural Sciences

Office in Shepardson Building, Room 121
(970) 491-6274
agsci.colostate.edu (http://agsci.colostate.edu)

Professor Ajay Menon, Dean
Professor James Pritchett, Executive Associate Dean
Professor Ken Barbarick, Associate Dean of Academic Programs
Professor Jan Leach, Associate Dean of Research

Undergraduate Majors

• Agricultural Business
• Agricultural Education
• Animal Science
• Environmental and Natural Resource Economics
• Environmental Horticulture
• Equine Science
• Horticulture
• Landscape Architecture
• Soil and Crop Sciences

Undergraduate Minors
• Agricultural and Resource Economics
• Agricultural Literacy
• Entomology
• Horticulture
• Environmental Horticulture
• Plant Health
• Soil Resources and Conservation
• Soil Science

Interdepartmental Minor
• Interdisciplinary Minor in Organic Agriculture

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Master's Programs
Master of Agriculture, Plan A
Master of Agriculture, Plan B
Master of Agricultural Extension Education, Plan C
Master of Agriculture, Integrated Resource Management Specialization
Master of Agriculture, Plan A, Teacher Development Specialization
Master of Agriculture, Plan B, Teacher Development Specialization

Agriculture was the first science . . . the progenitor of sciences . . . and it remains the science that supports human life. It is a science concerned with improving the quality of life and maintaining a productive, safe, and sustainable environment. Agricultural programs integrate biological, physical, and social sciences with agricultural sciences. Students may look forward to careers in basic and applied research; production and utilization of food and related products; resource use and conservation; industry and business; education and public service; technical and professional services; professional, scientific, and technical communication; governmental, as well as the policy and regulations of our agricultural systems.

College Programs

Undergraduate Majors
Undergraduate programs lead to a Bachelor of Science degree which requires a minimum of 120 credits with a minimum of 42 credits in upper-division courses. Most departments have a 12-credit limit for independent study and/or internship courses in fulfillment of the 120 credits (specific limits may be obtained from the individual department). Information on interdepartmental and departmental majors, the various concentrations available, and career opportunities are described on individual program pages. Students may consider simultaneously completing the requirements for a second major. Information about Second Major Requirements can be found in the section on Undergraduate Degrees.

Internships
Students are encouraged to select an internship with an approved cooperator. The student’s department determines the number of allowable credits. Internships are available each term including the summer term. Internships normally require 45 hours of contact per academic credit and do allow a stipend to be provided, though many are unpaid. Application should be made to the department at least 30 days before the term of the internship.

Education Abroad
Education Abroad programs are available to students in the College of Agricultural Sciences to become global citizens; the knowledge of other cultures is valuable in understanding our own. Students are encouraged to study outside the United States as part of their overall program at CSU. There are active programs in Australia, New Zealand, France, Costa Rica, Spain, and Mexico, in addition to other countries. Students interested in education abroad should plan in advance by visiting the College of Agricultural Sciences (http://agsci.colostate.edu) and discussing opportunities with their academic advisor, the Associate Dean of Academic Programs, and/or by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Transfer of Credits from Other Institutions
Students who expect to transfer to the College of Agricultural Sciences are advised to plan carefully and in advance of their planned transfer to ensure that transfer credits meet required courses in their chosen major. Transfer evaluations are generally determined by the Registrar’s Office, although departments determine transfer of courses required by the department. Students planning to transfer to CSU are encouraged to access Transferology (https://www.transferology.com/login.htm)” to determine if courses they are taking at another institution will transfer to CSU. If a course is not listed, they should contact the Registrar’s Office on campus. (Note: Credits from two-year colleges are not accepted for 300 and above level courses at CSU.) The College of Agricultural Sciences welcomes transfer students from both two- and four-year colleges and encourages potential transfer students to work closely with the University to minimize transfer issues.

Currently the College of Agricultural Sciences is the only institution that has the ability to grant a four-year baccalaureate in agriculture. For that reason, the College works hard to collaborate with community and four-year colleges across Colorado; collaboratively with the statewide organization entitled CACTA (Colorado Association of Colleges and Teachers of Agriculture), to develop state-wide articulation agreements as well as transfer arrangements. This information can be found at the Registrar’s Office. (http://registrar.colostate.edu/transfer-guides) Because of a mutual general education core, students that take courses for a major listed on a state-wide agreement are guaranteed to graduate in an additional 60 credits if they follow course recommendations.
Department of Agricultural and Resource Economics

Office in Clark Building, Room B320
(970) 491-6325
dare.agsci.colostate.edu (http://dare.agsci.colostate.edu)

Professor Gregory M. Perry, Head
Professor Dana Hoag, Undergraduate Coordinator
Professor Marco Costanigro, Graduate Coordinator

Undergraduate

Majors

- Agricultural Business
  - Agricultural Economics Concentration
  - Farm and Ranch Management Concentration

- Agricultural Education
  - Teacher Development Concentration
  - Agricultural Literacy Concentration

- Environmental and Natural Resource Economics

Minor

- Agricultural Literacy
- Agricultural and Resource Economics

Graduate

Graduate Programs in Agricultural and Resource Economics

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. A description of these programs may be found in the Graduate and Professional Bulletin or on the department’s website (http://dare.agsci.colostate.edu).

Master Programs

- Master of Science in Agricultural and Resource Economics, Plan A
- Master of Science in Agricultural and Resource Economics, Plan B

Ph.D.

- Ph.D. in Agricultural and Resource Economics

Courses

Subjects in this department include: Agricultural and Resource Economics (AREC) and Agricultural Education (AGED).

Agricultural and Resource Economics (AREC)

AREC 202 Agricultural and Resource Economics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Introduction to decision-making by consumers, firms, and government and the resulting allocation of resources through markets.
Prerequisite: MATH 117, may be taken concurrently or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Credit not allowed for both AREC 202 and ECON 202.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

AREC 224 Introduction to Agribusiness Entrepreneurship Credit: 1 (0-0-1)
Course Description: Introductory exposure to entrepreneurship for agribusinesses through presentations by industry professionals.
Prerequisite: AREC 202, may be taken concurrently or ECON 202, may be taken concurrently.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AREC 240 Issues in Environmental Economics (GT-SS1) Credits: 3 (3-0-0)
Also Offered As: ECON 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both AREC 240 and ECON 240.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).
AREC 305 Agricultural and Resource Enterprise Analysis Credits: 3 (2-2-0)
Course Description: Use of records in agricultural and resource enterprise management; analytical methods, budgets, and planning techniques for improved decision making.
Prerequisite: (CIS 120 or BUS 150 or CS 110) and (AREC 202 or ECON 202).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 310 Agricultural Marketing Credits: 3 (3-0-0)
Course Description: Market structure, behavior, and performance including futures market and market games theory.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 311 Agricultural and Resource Product Marketing Credits: 3 (3-0-0)
Course Description: Theory and practice of marketing-differentiated agricultural products and natural resource amenities with focus on strategies and market trends.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 325 Personnel Management in Agriculture Credits: 3 (3-0-0)
Course Description: Human resource issues for agribusiness firms. Managing employees, legal issues, negotiation methods, and benefits packages. Workplace professionalism.
Prerequisite: AREC 202 or ECON 202.
Restriction: .
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 328 Small Agribusiness Management Credits: 3 (3-0-0)
Course Description: Apply business principles to small agribusinesses and cooperatives.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 335 Introduction to Econometrics Credits: 3 (3-0-0)
Also Offered As: ECON 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (MATH 141 or MATH 155 or MATH 160) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Credit not allowed for both AREC 335 and ECON 335.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 340 Introduction: Economics of Natural Resources Credits: 3 (3-0-0)
Also Offered As: ECON 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Credit not allowed for both AREC 340 and ECON 340. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 341 Environmental Economics Credits: 3 (3-0-0)
Course Description: Economic theories and analytic frameworks are developed and applied to contemporary problems of the use and protection of the natural environment.
Prerequisite: (AREC 202 or ECON 202) and (AREC 240 or ECON 240).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 342 Water Law, Policy, and Institutions Credits: 3 (3-0-0)
Course Description: Legal water issues within the context of historical, social and economic development with emphasis on the southwestern United States.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)
Also Offered As: ECON 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Credit not allowed for both AREC 346 and ECON 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 375 Agricultural Law Credits: 3 (3-0-0)
Course Description: Laws, regulations, case decisions affecting ranching and farming in the Rocky Mountain area.
Prerequisite: None.
Restriction: Must be a: Junior.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 381 Introduction to Environmental Economics Credits: 3 (3-0-0)
Course Description: Design and measurement of economic values and environmental policy; how the theory can be used to construct solutions to real-world problems.
Prerequisite: (AREC 202 or ECON 202) and (MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
AREC 405 Agricultural Production Management Credits: 3 (2-2-0)  
Course Description: Economic principles of agricultural production decisions with linear programming analysis of production choices and farm planning.  
Prerequisite: AREC 305.  
Registration Information: Must register for lecture and laboratory.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

AREC 408 Agricultural Finance Credits: 3 (3-0-0)  
Course Description: Monetary affairs of agribusiness and agricultural production emphasizing credit institutions and procurement, investment, and management.  
Prerequisite: AREC 305.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  

AREC 412 Agricultural Commodities Marketing Credits: 3 (3-0-0)  
Course Description: Agricultural marketing and agribusiness principles applied to current marketing problems relating to livestock and field and horticultural crops.  
Prerequisite: AREC 310.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

AREC 415 International Agricultural Trade Credits: 3 (3-0-0)  
Course Description: Agricultural trade patterns and institutions; trade theory with applications to agriculture. Current issues in agricultural trade.  
Prerequisite: AREC 310 and ECON 204.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

AREC 428 Agricultural Business Management Credits: 3 (3-0-0)  
Course Description: Economic analysis, organization, and management practices of agriculture and food industries studied through simulation, case study, computer labs.  
Prerequisite: AREC 305 and AREC 310.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

AREC 440 Advanced Environmental and Resource Economics Credits: 3 (3-0-0)  
Course Description: Microeconomic techniques to rigorously explore economic decision-making and policy as they apply to environmental and natural resource problems.  
Prerequisite: (AREC 340 or ECON 340) and (AREC 341 and ECON 306).  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

AREC 442 Water Resource Economics Credits: 3 (3-0-0)  
Course Description: An in-depth exploration of the role of economics in water resource planning.  
Prerequisite: AREC 342 and ECON 306, may be taken concurrently.  
Registration Information: Credit not allowed for both AREC 442 and AREC 542.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

AREC 452 Real Estate Appraisal Principles Credits: 2 (2-0-0)  
Also Offered As: REL 452.  
Course Description: Theoretical principles that underlie real estate appraisal methods.  
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).  
Registration Information: Credit not allowed for both AREC 452 and REL 452.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

AREC 453 Real Estate Appraisal Practices Credits: 2 (2-0-0)  
Also Offered As: REL 453.  
Course Description: Procedures and practices used in real estate appraisal.  
Prerequisite: AREC 452, may be taken concurrently or REL 452.  
Registration Information: Credit not allowed for both AREC 453 and REL 453.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

AREC 460 Ag- and Resource-Based Economic Development Credits: 3 (3-0-0)  
Course Description: Indicators, tools and approaches for agriculture- and natural resource-based economic development in resource dependent countries and communities.  
Prerequisite: ECON 306.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

AREC 478 Agricultural Policy Credits: 3 (3-0-0)  
Course Description: Formulation and administration of public policies affecting agricultural industries and rural areas in the United States.  
Prerequisite: AREC 202 or ECON 202 or AREC 240 or ECON 240.  
Term Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

AREC 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

AREC 487 Internship Credits: Var[1-6] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: May be taken for a maximum of 6 credits.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

AREC 495 Independent Study Credits: Var[1-6] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: May be taken for a maximum of 6 credits.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Term Offered</th>
<th>Prerequisite</th>
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<tr>
<td>AREC 496</td>
<td>Group Study</td>
<td>Var[1-18]</td>
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<td></td>
<td>Course Description</td>
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<tr>
<td></td>
<td>Prerequisite:</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Terms Offered:</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer.</td>
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<tr>
<td></td>
<td>Grade Mode:</td>
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<td></td>
<td>Instructor Option.</td>
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<tr>
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<td>Special Course Fee</td>
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<tr>
<td>AREC 505</td>
<td>Agricultural Production Economics</td>
<td>3 (3-0-0)</td>
<td>Fall (even years)</td>
<td>(AREC 202 or ECON 202).</td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Empirical applications of production economic theory for use of inputs and allocation of resources in agricultural, natural resource sectors.</td>
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<tr>
<td></td>
<td>Prerequisite:</td>
<td></td>
<td></td>
<td>(MATH 141) and (AREC 405 or ECON 306).</td>
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<tr>
<td></td>
<td>Term Offered:</td>
<td></td>
<td></td>
<td>Fall.</td>
</tr>
<tr>
<td></td>
<td>Grade Modes:</td>
<td></td>
<td></td>
<td>S/U within Student Option, Trad within Student Option.</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>AREC 506</td>
<td>Applied Microeconomic Theory</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 310) and (AREC 335 or ECON 335).</td>
</tr>
<tr>
<td></td>
<td>Also Offered As:</td>
<td></td>
<td></td>
<td>ECON 506.</td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite:</td>
<td></td>
<td></td>
<td>ECON 306.</td>
</tr>
<tr>
<td></td>
<td>Registration Information</td>
<td></td>
<td></td>
<td>Credit not allowed for both AREC 506 and ECON 506.</td>
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<tr>
<td></td>
<td>Term Offered:</td>
<td></td>
<td></td>
<td>Fall.</td>
</tr>
<tr>
<td></td>
<td>Grade Mode:</td>
<td></td>
<td></td>
<td>Traditional.</td>
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<td>Special Course Fee</td>
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<tr>
<td>AREC 507</td>
<td>Applied Welfare and Policy Analysis</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>How policies are crafted to effectively address social issues, especially for agriculture and the environment, and how they impact society.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite:</td>
<td></td>
<td></td>
<td>ECON 306.</td>
</tr>
<tr>
<td></td>
<td>Term Offered:</td>
<td></td>
<td></td>
<td>Spring.</td>
</tr>
<tr>
<td></td>
<td>Grade Mode:</td>
<td></td>
<td></td>
<td>Traditional.</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>AREC 508</td>
<td>Financial Management in Agriculture</td>
<td>2 (2-0-0)</td>
<td>Fall (odd years)</td>
<td>(AREC 310) and (AREC 335 or ECON 335).</td>
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<td></td>
<td>Course Description</td>
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<td></td>
<td>Systematic approach to understanding and applying financial management in farm businesses.</td>
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<td></td>
<td>Prerequisite:</td>
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<td></td>
<td>(AREC 408 or FIN 305) and (ECON 306).</td>
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<td>Term Offered:</td>
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<td>Fall.</td>
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<td>Grade Mode:</td>
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<td>Traditional.</td>
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<td>Special Course Fee</td>
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<tr>
<td>AREC 510</td>
<td>Agricultural Product Marketing</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td></td>
<td>Course Description</td>
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<td></td>
<td>Marketing techniques, industrial organization/competition for agricultural products in US domestic, international trade, and developing country markets.</td>
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<td></td>
<td>Prerequisite:</td>
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<td></td>
<td>(AREC 310) and (AREC 335 or ECON 335).</td>
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<td>Term Offered:</td>
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<td>Fall.</td>
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<td>Grade Modes:</td>
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<td>S/U within Student Option, Trad within Student Option.</td>
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<td>Special Course Fee</td>
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<td>No.</td>
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<tr>
<td>AREC 528</td>
<td>Applied Agribusiness Decision Tools</td>
<td>2 (2-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td></td>
<td>Course Description</td>
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<td></td>
<td>Applications of quantitative tools for managerial decision-making in the context of an agribusiness.</td>
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<td></td>
<td>Prerequisite:</td>
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<td></td>
<td>(AREC 305 or AREC 408 or FIN 305) and (ECON 306).</td>
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<td>Term Offered:</td>
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<td>Fall (even years).</td>
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<td>Grade Mode:</td>
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<td>Traditional.</td>
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<td>Special Course Fee</td>
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<tr>
<td>AREC 530</td>
<td>Agricultural Price Analysis</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td></td>
<td>Course Description</td>
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<td></td>
<td>Agricultural commodity prices related to neoclassical economics; current literature emphasizing management problems.</td>
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<td></td>
<td>Prerequisite:</td>
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<td></td>
<td>None.</td>
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<td>Term Offered:</td>
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<td>Grade Mode:</td>
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<td>Traditional.</td>
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<td>Special Course Fee</td>
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<tr>
<td>AREC 535</td>
<td>Applied Econometrics</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td>Also Offered As:</td>
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<td>ECON 535.</td>
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<td></td>
<td>Course Description</td>
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<td></td>
<td>Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.</td>
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<td></td>
<td>Prerequisite:</td>
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<td>(AREC 335 or ECON 335) and (ECON 304 or ECON 306).</td>
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<td>Registration Information</td>
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<td>Credit not allowed for both AREC 535 and ECON 535.</td>
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<td>Term Offered:</td>
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<td>Fall.</td>
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<td>Grade Mode:</td>
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<td>Traditional.</td>
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<td>Special Course Fee</td>
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<td>AREC 540</td>
<td>Environmental and Natural Resource Economics</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td>Also Offered As:</td>
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<td>ECON 540.</td>
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<td>Course Description</td>
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<td></td>
<td>Theory, methods, and policy in environmental and natural resource economics.</td>
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<td>Prerequisite:</td>
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<td>AREC 506 or ECON 506.</td>
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<td>Registration Information</td>
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<td>Credit not allowed for both AREC 540 and ECON 540.</td>
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<td>Term Offered:</td>
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<td>Spring.</td>
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<td>Grade Mode:</td>
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<td>Traditional.</td>
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<td></td>
<td>Special Course Fee</td>
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<td></td>
<td>No.</td>
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<tr>
<td>AREC 541</td>
<td>Environmental Economics</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td>Also Offered As:</td>
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<td>ECON 541.</td>
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<td>Course Description</td>
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<td>Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.</td>
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<td></td>
<td>Prerequisite:</td>
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<td>ECON 306.</td>
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<td>Registration Information</td>
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<td></td>
<td>Credit not allowed for both AREC 541 and ECON 541.</td>
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<td>Term Offered:</td>
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<td>Spring.</td>
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<td>Grade Modes:</td>
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<td>S/U within Student Option, Trad within Student Option.</td>
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<td>Special Course Fee</td>
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<td>AREC 542</td>
<td>Applied Advanced Water Resource Economics</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td>Course Description</td>
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<td></td>
<td>Theory and application of economics in water resource planning.</td>
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<td></td>
<td>Prerequisite:</td>
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<td></td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td>Registration Information</td>
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<td></td>
<td>Credit not allowed for both AREC 542 and ECON 442.</td>
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<td>Term Offered:</td>
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<td></td>
<td>Spring.</td>
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<td>Grade Mode:</td>
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<td>Traditional.</td>
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<td>Special Course Fee</td>
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<td>AREC 547</td>
<td>Public Lands Planning and Management</td>
<td>3 (3-0-0)</td>
<td>Spring</td>
<td>(AREC 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).</td>
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<td>Course Description</td>
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<td>Principles and techniques used by federal land management agencies including Forest Service, Park Service, Fish and Wildlife Service, and BLM.</td>
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<td></td>
<td>Prerequisite:</td>
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<td>AREC 202 or ECON 202.</td>
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<td>Term Offered:</td>
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<td>Spring (odd years).</td>
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<td>Grade Mode:</td>
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<td>Traditional.</td>
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<td>Special Course Fee</td>
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</tbody>
</table>
AREC 563 Regional Economics-Theory, Methods, and Issues  Credits: 3 (3-0-0)
Also Offered As: ECON 563.
Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.
Prerequisite: ECON 306 and ECON 501, may be taken concurrently.
Registration Information: Credit not allowed for both AREC 563 and ECON 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 566 Contemporary Issues in Developing Countries  Credits: 3 (3-0-0)
Also Offered As: SOC 566.
Course Description: Social, economic, and technological factors in developing countries.
Prerequisite: None.
Registration Information: Two or more courses in AREC or ECON or SOC. Credit not allowed for both AREC 566 and SOC 566.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 570 Methodology of Economic Research  Credits: 3 (3-0-0)
Also Offered As: ECON 530.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both AREC 570 and ECON 530.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 572 Social Benefit Cost Analysis  Credits: 3 (3-0-0)
Course Description: Theory, application of concepts relating to social benefit cost analysis of public projects, policies intended to promote social welfare, economic growth.
Prerequisite: ECON 306.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 605 Agricultural Production and Cost Analysis  Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of production and cost issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 606 Microeconomic Analysis I  Credits: 3 (3-0-0)
Also Offered As: ECON 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 306 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 606 and ECON 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 610 Agricultural Marketing and Demand Analysis  Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of agricultural marketing and demand issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 615 Optimization Methods for Applied Economics  Credits: 3 (3-0-0)
Course Description: Theory and practice of optimization techniques used in economic applications with emphasis on linear and nonlinear programming.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 635 Econometric Theory I  Credits: 3 (3-0-0)
Also Offered As: ECON 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 635 and ECON 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 647 Land Use Economics and Spatial Modeling  Credits: 3 (3-0-0)
Course Description: Use of spatial data in economic analysis of land use focusing on development patterns, land conservation, spatial externalities and agricultural land.
Prerequisite: (AREC 506 or ECON 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
AERC 660 Development of Rural Resource-Based Economies Credits: 3 (3-0-0)
Course Description: Economic literature-based exploration of human welfare measures and implications of approaches to agriculture and resource-based economic development.
Prerequisite: AREC 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

AERC 678 Agricultural and Resource Policy Credits: 3 (3-0-0)
Course Description: Evaluate and analyze economic theory, applications and public incentives related to government policies for agriculture and natural resources.
Prerequisite: ECON 306 and MATH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AERC 695 Independent Study Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AERC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AERC 705 Advanced Production and Technological Change Credits: 2 (2-0-0)
Course Description: Production theory is applied to real-world issues including risk, innovation, and environment, through lectures and readings of current literature.
Prerequisite: (AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AERC 706 Microeconomic Analysis II Credits: 3 (3-0-0)
Also Offered As: ECON 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 706 and ECON 706.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AERC 710 Advanced Agricultural Marketing Issues Credits: 2 (2-0-0)
Course Description: Theoretical and modeling issues of consumer demand, market structure, product differentiation and market behavior.
Prerequisite: (AREC 610) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AERC 735 Econometric Theory II Credits: 2 (2-0-0)
Also Offered As: ECON 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 735 and ECON 735. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AERC 736A Advanced Econometric Methods: Discrete Choice Models Credit: 1 (1-0-0)
Also Offered As: ECON 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AERC 736B Advanced Econometric Methods: Panel Data Models Credit: 1 (1-0-0)
Also Offered As: ECON 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AERC 736C Advanced Econometric Methods: Time Series Models Credit: 1 (1-0-0)
Also Offered As: ECON 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AREC 740 Advanced Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: ECON 740.
Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 741 Advanced Environmental Economics Credits: 3 (3-0-0)
Also Offered As: ECON 741.
Course Description: Advanced theory, methods, and literature in environmental economics.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 770 Advanced Methods in Applied Economics Credits: 3 (3-0-0)
Course Description: Advanced research methods in applied economics: lab and field experiments, non-market valuation and discrete choice experiments.
Prerequisite: (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Agricultural Education (AGED)
AGED 110 Agriculture Production Systems Credits: 3 (2-3-0)
Course Description: Broad survey of the diverse aspects of Colorado agriculture.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 210 History of Agriculture in the United States Credits: 3 (3-0-0)
Course Description: Relationships in agriculture. Historical/Native American/early practices, industrial agriculture, technologies, philosophy, green revolution.
Prerequisite: CO 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 220 Understanding Agricultural Education Credit: 1 (1-0-0)
Course Description: Understanding different agricultural education systems. Understanding delivery models of agricultural education programs.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 240 Technical Tool Applications in Ag Education Credits: 2 (1-3-0)
Course Description: Development of safe competencies and applications related to power and technical tools utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and lab.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 241 Plumbing and Electrical Applications in Ag Ed Credit: 1 (1-0-0)
Course Description: Development of competencies and theory related to plumbing and electrical applications utilized in school-based agricultural education programs.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
AGED 244  Power Systems in Agricultural Education  Credit: 1 (1-0-0)
Course Description: Development of competencies and theory related to
agricultural power systems utilized in school-based agricultural
education programs.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 320  Technology Lab for Ag Education  Credit: 1 (0-3-0)
Course Description: Laboratory applications related to the power,
structure, and technical systems pathway utilized in school-based
agricultural education programs.
Prerequisite: AGED 240, may be taken concurrently or AGED 241, may be
taken concurrently or AGED 244, may be taken concurrently.
Registration Information: May be taken twice for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 330  Program Design and Evaluation in Ag. Literacy  Credits:
3 (3-0-0)
Course Description: Design and evaluate programs in agricultural literacy
using experiential methods.
Prerequisite: AGED 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 420  Developing School-Based Ag Education Programs  Credits:
3 (3-0-0)
Course Description: Developing knowledge in the approach and delivery
of school-based agricultural education programs.
Prerequisite: AGED 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 430  Methods of Agricultural Literacy  Credits: 3 (3-0-0)
Course Description: Prepare and conduct agricultural literacy
instructional units to work with a variety of audiences and instructional
topics.
Prerequisite: AGED 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 486  Practicum  Credits: Var[2-6] (0-0-0)
Course Description: Supervised work experience in approved agricultural
education setting with periodic consultation of faculty.
Prerequisite: AGED 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 487  Internship  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 495  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 496  Group Study  Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 540  Ag Ed Laboratory Management and Safety  Credits: 2 (2-0-0)
Course Description: Theory, management, and pedagogy of delivering
safety instruction and experiential curriculum in secondary agricultural
education laboratory settings.
Prerequisite: EDCT 420.
Restriction: 
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Agricultural Business

The Agricultural Business major teaches students the operating
techniques and business skills used in the modern food and fiber
industry. This program builds student knowledge and skills needed
to manage small and medium sized business in agriculture and allied
industries. This is true whether the business is directly involved in
production, value-adds to raw agricultural products, or provides support
services including the distribution, processing, packaging, and marketing
of agricultural products.

Two things tend to distinguish the major in Agricultural Business from a
typical business degree: first, our focus tends to be on small and medium
sized businesses where the decision maker must be more attuned to
all dimensions of their operating environment, whereas more traditional
business degrees often focus on a larger business organization where
functions are more specialized. Second, the major emphasizes the
importance of understanding the underlying technical processes that
drive business decisions through formal course requirements in the
agricultural sciences. The interface between technical training in
agricultural sciences, economics, and management sets this degree
apart.

Completing this program enhances students’ professional development,
technical competence, problem solving skills, and communication skills.
The program operates in the nexus of business management, public
policy, and agriculture. Strong interdisciplinary coordination in the
department allows majors in agricultural business to strengthen their
technical training by simultaneously completing a second major in allied
fields including animal science, equine science, soil and crop science,
agricultural education, technical journalism, and other fields of interest.

Learning Outcomes

Successful students will demonstrate:

- Technical competency including appropriate use of economic
theory in formulating analytical problems, identifying and gathering
appropriate data, and employing appropriate economic methods to
analyze those problems, utilizing appropriate available computer technology
• Ability to solve real-world problems beyond the pedagogical context. Students will be able to identify a problem and its scope, evaluate resources to address the problem, formulate alternative solutions, and select the solution(s) most consistent with a stated objective
• Proficiency in oral and written communication including the ability to communicate critically and analytically at a professional level

**Potential Occupations**

Although students from farms and ranches choose this major each year, business-oriented students with a wide variety of backgrounds have launched successful careers with this versatile degree. Graduates establish careers in management, marketing, sales, and finance to name a few areas. Participating in internships and experiential opportunities is strongly encouraged to enhance practical training and development.

**Effective Fall 2015**

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRI 192 or 292</td>
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</tr>
<tr>
<td>Orientation to Agricultural Systems</td>
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<tr>
<td>Transfer Seminar</td>
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<tr>
<td>ANEQ 101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Animal Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANEQ 102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Equine Science</td>
<td></td>
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<tr>
<td>FTEC 110</td>
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<tr>
<td>Food-From Farm to Table</td>
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<td>HORT 100</td>
<td>3A</td>
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<tr>
<td>Horticultural Science</td>
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<td>SOCR 100</td>
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<tr>
<td>General Crops</td>
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<td>AREC 202</td>
<td>3C</td>
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<tr>
<td>&amp; BZ 111</td>
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<tr>
<td>BZ 120</td>
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<tr>
<td>Principles of Plant Biology (GT-SC1)</td>
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<tr>
<td>LIFE 102</td>
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<tr>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>CHEM 103</td>
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<td>Chemistry in Context (GT-SC2)</td>
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<tr>
<td>CO 150</td>
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<td>College Composition (GT-CO2)</td>
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<td>CS 110</td>
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<td>Personal Computing</td>
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<td>ECON 204</td>
<td>3C</td>
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<tr>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<td>MATH 117</td>
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<td>College Algebra in Context I (GT-MA1)</td>
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<td>MATH 118</td>
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<td>College Algebra in Context II (GT-MA1)</td>
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<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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**Sophomore**

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<td>Fundamentals of Accounting</td>
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<td>AREC 224</td>
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<tr>
<td>Introduction to Agribusiness Entrepreneurship</td>
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<td>AREC 305</td>
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<tr>
<td>Agricultural and Resource Enterprise Analysis</td>
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<td>MATH 141</td>
<td>3B</td>
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<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>Foundations and Perspectives 2</td>
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## Elective

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<tbody>
<tr>
<td>AREC 310</td>
<td>Agricultural Marketing</td>
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Select a minimum of 3 credits from the following:

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AREC 325</td>
<td>Personnel Management in Agriculture</td>
<td>3</td>
</tr>
<tr>
<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
<td></td>
</tr>
<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
<td></td>
</tr>
<tr>
<td>AREC 346/ECON 346</td>
<td>Economics of Outdoor Recreation</td>
<td></td>
</tr>
<tr>
<td>AREC 375</td>
<td>Agricultural Law</td>
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</tr>
<tr>
<td>AREC 415</td>
<td>International Agricultural Trade</td>
<td></td>
</tr>
<tr>
<td>AREC 442</td>
<td>Water Resource Economics</td>
<td></td>
</tr>
<tr>
<td>AREC 452/REL 452</td>
<td>Real Estate Appraisal Principles</td>
<td></td>
</tr>
<tr>
<td>AREC 453/REL 453</td>
<td>Real Estate Appraisal Practices</td>
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</tr>
<tr>
<td>AREC 335/ECON 335</td>
<td>Introduction to Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 306</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>FIN 305</td>
<td>Fundamentals of Finance</td>
<td>3</td>
</tr>
<tr>
<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
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<td>MKT 362</td>
<td>Professional Selling</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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### Total Credits: 33

## Junior

### Total Credits: 30-31

## Senior

Select two courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>AREC 405</td>
<td>Agricultural Production Management</td>
<td>4A,4C</td>
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<tr>
<td>AREC 408</td>
<td>Agricultural Finance</td>
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<tr>
<td>AREC 412</td>
<td>Agricultural Commodities Marketing</td>
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<tr>
<td>AREC 428</td>
<td>Agricultural Business Management</td>
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Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
<td>4B</td>
</tr>
<tr>
<td>AREC 478</td>
<td>Agricultural Policy</td>
<td>4A,4B,4C</td>
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</table>

Select a minimum of six credits from the following, not taken elsewhere:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREC 325</td>
<td>Personnel Management in Agriculture</td>
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</tr>
<tr>
<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
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<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
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<tr>
<td>AREC 346/ECON 346</td>
<td>Economics of Outdoor Recreation</td>
<td></td>
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<tr>
<td>AREC 375</td>
<td>Agricultural Law</td>
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<tr>
<td>AREC 405</td>
<td>Agricultural Production Management</td>
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<td>AREC 408</td>
<td>Agricultural Finance</td>
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<td>AREC 412</td>
<td>Agricultural Commodities Marketing</td>
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<tr>
<td>AREC 415</td>
<td>International Agricultural Trade</td>
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<tr>
<td>AREC 442</td>
<td>Water Resource Economics</td>
<td></td>
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<tr>
<td>AREC 452/REL 452</td>
<td>Real Estate Appraisal Principles</td>
<td></td>
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<tr>
<td>AREC 453/REL 453</td>
<td>Real Estate Appraisal Practices</td>
<td></td>
</tr>
<tr>
<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
<td></td>
</tr>
<tr>
<td>AREC 478</td>
<td>Agricultural Policy</td>
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### Total Credits: 30-31
Electives\(^3\)  

<table>
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<tr>
<th>Total Credits</th>
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<tbody>
<tr>
<td>Program Total Credits:</td>
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</table>

1. Select from the courses in AGED, AGRI, ANEQ, AREC, BSPM, FTEC, HORT, LAND, SOCR, FSHN 150, NR 120A-NR 120B, or NR 320. A maximum of 6 AREC credits may be used as Agricultural Science Electives.

2. Select three courses to meet the AUCC core requirements in Arts and Humanities (3B), Historical Perspectives (3D), and Global and Cultural Awareness (3E).

3. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

### Freshman

#### Semester 1

<table>
<thead>
<tr>
<th>Critical</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

Select one course from the following:

- **AGRI 192** Orientation to Agricultural Systems
- **AGRI 292** Transfer Seminar
- **AREC 202** Agricultural and Resource Economics (GT-SS1)
- **CS 110** Personal Computing

Select four credits from the following:

- **BZ 110** Principles of Animal Biology (GT-SC2)
- **& BZ 111**
- **BZ 120** Principles of Plant Biology (GT-SC1)
- **LIFE 102** Attributes of Living Systems (GT-SC1)
- **MATH 117** College Algebra in Context I (GT-MA1)
- **MATH 118** College Algebra in Context II (GT-MA1)
- **MATH 124** Logarithmic and Exponential Functions (GT-MA1)

**Total Credits** 15

#### Semester 2

<table>
<thead>
<tr>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4</td>
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</table>

Select one course from the following:

- **ANEQ 101** Food Animal Science
- **ANEQ 102** Introduction to Equine Science
- **FTEC 110** Food-From Farm to Table
- **HORT 100** Horticultural Science
- **SOCR 100** General Crops
- **CHEM 103** Chemistry in Context (GT-SC2)
- **CO 150** College Composition (GT-CO2)
- **ECON 204** Principles of Macroeconomics (GT-SS1)

Arts and Humanities 3B 3

*AUCC 1B (MATH) must be completed by the end of Semester 2.*

**Total Credits** 15

### Sophomore

#### Semester 3

<table>
<thead>
<tr>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
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- **ACT 205** Fundamentals of Accounting
- **AREC 224** Introduction to Agribusiness Entrepreneurship
- **SPCM 200** Public Speaking

*Historical Perspectives* 3D 3

Agricultural Sciences Electives (See List on Concentration Requirements Tab) 6

*CS 110 must be completed by the end of Semester 3.*

**Total Credits** 16

#### Semester 4

<table>
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<tr>
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<th>Recommended</th>
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<th>Credits</th>
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<tbody>
<tr>
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</table>

- **AREC 305** Agricultural and Resource Enterprise Analysis

**Total Credits** 16
MATH 141  Calculus in Management Sciences (GT-MA1)  X  1B  3  
Advanced Writing  2  3  
Arts and Humanities  3B  3  
Global and Cultural Awareness  3E  3  
Elective  2  
ECON 204, ACT 205, and one of the following: ANEQ 101, ANEQ 102, FTEC 110, HORT 100, or SOCR 100, must be completed by the end of Semester 4.

<table>
<thead>
<tr>
<th>Junior</th>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
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<td>ECON 306</td>
<td>Intermediate Microeconomics</td>
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<tr>
<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
<td>X</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td></td>
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<td>AREC Choice Block (300- to 400-level AREC courses not previously taken)</td>
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Total Credits: 17

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<th>AUCC</th>
<th>Credits</th>
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<td>Introduction to Econometrics</td>
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<td>ECON 335</td>
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<tr>
<td>FIN 305</td>
<td>Fundamentals of Finance</td>
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<td>3</td>
</tr>
<tr>
<td>MKT 362</td>
<td>Professional Selling</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Science Elective (See List on Program Requirements Tab)</td>
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<td>3</td>
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<tr>
<td>AREC 305 and ECON 306 must be completed by the end of Semester 6.</td>
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Total Credits: 15

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<th>AUCC</th>
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<tr>
<td>AREC 405</td>
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<td>AREC 408</td>
<td>Agricultural Finance</td>
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Total Credits: 15

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<td>Select one course from the following:</td>
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<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
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<td>AREC 478</td>
<td>Agricultural Policy</td>
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<td>4A,4B,4C</td>
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<tr>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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</tbody>
</table>

Total Credits: 12

Program Total Credits: 120
## Major in Agricultural Business, Agricultural Economics Concentration

The Agricultural Economics concentration focuses on the theoretical and analytic tools of applied economics. This degree is more quantitative in nature and best prepares students interested in graduate study.

### Requirements

#### Effective Fall 2015

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems Transfer Seminar</td>
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Select one from the following courses:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANEQ 101</td>
<td>Food Animal Science</td>
<td>3-4</td>
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<tr>
<td>ANEQ 102</td>
<td>Introduction to Equine Science</td>
<td></td>
</tr>
<tr>
<td>FTEC 110</td>
<td>Food-From Farm to Table</td>
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</tr>
<tr>
<td>HORT 100</td>
<td>Horticultural Science</td>
<td>3A</td>
</tr>
<tr>
<td>SOCR 100</td>
<td>General Crops</td>
<td></td>
</tr>
<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
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Select four credits from the following courses:

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<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<tr>
<td>&amp; BZ 111</td>
<td></td>
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<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
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<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
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<td>CO 150</td>
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<tr>
<td>CS 110</td>
<td>Personal Computing</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
</tr>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
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</table>

**Total Credits** 30-31

**Sophomore**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ACT 205</td>
<td>Fundamentals of Accounting</td>
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<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
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<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>Advanced Writing</td>
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<tr>
<td>Foundations and Perspectives</td>
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<td>3B, 3D, 3E</td>
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<tr>
<td>Agricultural Sciences Electives</td>
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**Electives**

**Total Credits** 30

**Junior**

Select two courses from the following:

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<tbody>
<tr>
<td>AREC 310</td>
<td>Agricultural Marketing</td>
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<tr>
<td>AREC 311</td>
<td>Agricultural and Resource Product Marketing</td>
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<tr>
<td>AREC 408</td>
<td>Agricultural Finance</td>
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</tbody>
</table>
### AREC 412  
Agricultural Commodities Marketing  

### AREC 428  
Agricultural Business Management  

### AREC 335/ECON 335  
Introduction to Econometrics 3  

### AREC 340/ECON 340 or 342  
Introduction: Economics of Natural Resources  
Water Law~ Policy~ and Institutions 3  

### FIN 305  
Fundamentals of Finance 3  

### STAT 301  
Introduction to Statistical Methods 3  

### Agricultural Sciences Electives 3  

### AREC, ECON Electives 3  

### Electives 6  

**Total Credits** 30  

### Senior  

### AREC 405  
Agricultural Production Management 4A,4C 3  

### AREC 415  
International Agricultural Trade 3  

### AREC 478  
Agricultural Policy 4A,4B,4C 3  

### ECON 304  
Intermediate Macroeconomics 3  

### ECON 306  
Intermediate Microeconomics 3  

### Agricultural Sciences Electives 3  

### AREC, ECON Electives 4  

### Electives 5  

**Total Credits** 29-30  

**Program Total Credits:** 120  

1. Students planning to take SOCR 240 should take CHEM 107 and CHEM 108 and reduce the number of free electives in the program.  
2. Select three courses to meet the AUCC core requirements in Arts and Humanities (3B), Historical Perspectives (3D), and Global and Cultural Awareness (3E).  
3. Select a total of 12 credits from courses in AGED, AGRI, ANEQ, AREC, BSPM, FSHN, FTEC, HORT, LAND, NR, RS, SOCR, or WR. A maximum of six AREC credits may be used as Agricultural Sciences electives.  
4. Select credits from AREC and/or ECON courses.  
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>AUCC</th>
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<td>Orientation to Agricultural Systems</td>
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<td>AGRI 292</td>
<td>Transfer Seminar</td>
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<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>3C</td>
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<td>CS 110</td>
<td>Personal Computing</td>
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<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>3A</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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### Major in Agricultural Business, Agricultural Economics Concentration

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<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>ANEQ 101</td>
<td>Food Animal Science</td>
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<td>ANEQ 102</td>
<td>Introduction to Equine Science</td>
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<td>FTEC 110</td>
<td>Food-From Farm to Table</td>
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<td>HORT 100</td>
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<td>SOCR 100</td>
<td>General Crops</td>
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<td>College Composition (GT-CO2)</td>
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<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
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#### Sophomore

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<td>Fundamentals of Accounting</td>
<td></td>
<td>3</td>
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<td>AREC 305</td>
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<td>Agricultural and Resource Enterprise Analysis</td>
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<td>Historical Perspectives</td>
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<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>Public Speaking</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
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<td>Global and Cultural Awareness</td>
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<tr>
<td>ECON 204 and ACT 205 must be completed by the end of Semester 4.</td>
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</table>

#### Junior

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<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AREC 310</td>
<td>Agricultural Marketing</td>
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<td>3</td>
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<td>AREC 311</td>
<td>Agricultural and Resource Product Marketing</td>
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<tr>
<td>AREC 408</td>
<td>Agricultural Finance</td>
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<tr>
<td>AREC 412</td>
<td>Agricultural Commodities Marketing</td>
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<td>AREC 428</td>
<td>Agricultural Business Management</td>
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<tr>
<td>FIN 305</td>
<td>Fundamentals of Finance</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>X</td>
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<td></td>
<td><strong>Total Credits</strong></td>
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### Senior

Select one course from the following:

- AREC 310 Agricultural Marketing
- AREC 311 Agricultural and Resource Product Marketing
- AREC 408 Agricultural Finance
- AREC 412 Agricultural Commodities Marketing
- AREC 428 Agricultural Business Management
- FIN 305 Fundamentals of Finance
- STAT 301 Introduction to Statistical Methods
- Elective
- AREC 310 must be completed by the end of Semester 5.

**Total Credits**: 15

Select one course from the following:

- AREC 310 Agricultural Marketing
- AREC 311 Agricultural and Resource Product Marketing
- AREC 408 Agricultural Finance
- AREC 412 Agricultural Commodities Marketing
- AREC 428 Agricultural Business Management
- AREC 335/ ECON 335 Introduction to Econometrics

Select one course from the following: 3
Colorado State University

AREC 340/ ECON 340
AREC 342

Introduction: Economics of Natural Resources
Water Law, Policy, and Institutions

AREC/ECON Elective 3
Elective 3

STAT 301 must be completed by the end of Semester 6. X

Total Credits 15

Senior
Semester 7

ECON 306 Intermediate Microeconomics
AREC 415 International Agricultural Trade
AREC/ECON Electives 6
Elective 3

AREC 335 must be completed by the end of Semester 7. X

Total Credits 15

Semester 8

ECON 304 Intermediate Macroeconomics
AREC 405 Agricultural Production Management
AREC 478 Agricultural Policy

Agricultural Sciences Electives (See List on Concentration Requirements Tab) 6

The benchmark courses for the 8th semester are the remaining courses in the entire program of study

Total Credits 15

Program Total Credits: 120

Major in Agricultural Business, Farm and Ranch Management Concentration

The Farm and Ranch Management concentration builds skills in applied decision making that is required in production agriculture. The program of study allows students to develop a solid understanding of the underlying physical and biological sciences that drive agricultural technology.

Requirements

Effective Fall 2015

Freshman

AGRI 192 or 292 Orientation to Agricultural Systems Transfer Seminar

Select one course from the following: 3-4
ANEQ 101 Food Animal Science
ANEQ 102 Introduction to Equine Science
FTEC 110 Food-From Farm to Table
HORT 100 Horticultural Science 3A
SOCR 100 General Crops
AREC 202 Agricultural and Resource Economics (GT-SS1) 3C

Select four credits from the following: 4
BZ 110 Principles of Animal Biology (GT-SC2) 3A
& BZ 111
BZ 120 Principles of Plant Biology (GT-SC1) 3A
LIFE 102 Attributes of Living Systems (GT-SC1) 3A
CHEM 103 Chemistry in Context (GT-SC2) 3A
CO 150 College Composition (GT-CO2) 1A
CS 110 Personal Computing
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
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<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1B</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
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**Total Credits**: 30-31

**Sophomore**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Advanced Writing</td>
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<td>2</td>
</tr>
<tr>
<td>Foundations and Perspectives¹</td>
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<td>3B, 3D, 3E</td>
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<tr>
<td>Agricultural Science Electives²</td>
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<tr>
<td>Elective</td>
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</table>

**Total Credits**: 30

**Junior**

Select two courses from the following: 6

- AREC 310 Agricultural Marketing
- AREC 311 Agricultural and Resource Product Marketing
- AREC 412 Agricultural Commodities Marketing
- AREC 415 International Agricultural Trade
- AREC 428 Agricultural Business Management
- AREC 335/ECON 335 Introduction to Econometrics
- AREC 408 Agricultural Finance
- MKT 305 Fundamentals of Marketing
- MKT 362 Professional Selling
- STAT 301 Introduction to Statistical Methods
- Agricultural Sciences Electives² 6
- Electives 3

**Total Credits**: 30

**Senior**

<table>
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<tr>
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<tbody>
<tr>
<td>AREC 375</td>
<td>Agricultural Law</td>
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<tr>
<td>AREC 405</td>
<td>Agricultural Production Management 4A,4C</td>
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</table>

Select one from the following: 3

- AREC 460 Ag- and Resource-Based Economic Development 4B
- AREC 478 Agricultural Policy 4A,4B,4C
- ECON 306 Intermediate Microeconomics 3
- Agricultural Science Electives² 6
- AREC/ECON Electives³ 6
- Electives⁴ 5-6

**Total Credits**: 29-30

**Program Total Credits**: 120

¹ Select three courses to meet the AUCC requirements in Arts and Humanities (3B), Historical Perspectives (3D), and Global and Cultural Awareness (3E).

² Select a total of 15 credits from courses in AGED, AGRI, ANEQ, AREC, BSPM, FSHN, FTEC, HORT, LAND, NR, RS, SOCR, or WR. A maximum of six AREC credits may be used as Agricultural Science Electives.

³ Select from AREC and/or ECON courses.
Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

### Major Completion Map

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<td>AGRI 192</td>
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<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>CS 110</td>
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<td>Select four credits from the following:</td>
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<td>BZ 110  &amp; BZ 111</td>
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<td>1B</td>
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<td>Introduction to Equine Science</td>
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<td>FTEC 110</td>
<td>Food-From Farm to Table</td>
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<td>HORT 100</td>
<td>Horticultural Science</td>
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<td>SOCR 100</td>
<td>General Crops</td>
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<td>Chemistry in Context (GT-SC2)</td>
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<td>Principles of Macroeconomics (GT-SS1)</td>
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#### Sophomore

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<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
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<td>Historical Perspectives</td>
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<td>Advanced Writing</td>
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<td>Agricultural Sciences Elective (See List on Concentration Requirements Tab)</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>3B</td>
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<td>Global and Cultural Awareness</td>
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<td>Elective</td>
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Major in Agricultural Education

Agricultural Education is defined as a systematic program of instruction for students desiring to learn and teach/educate the science, business, and technology of agriculture, food and environmental/natural resource systems. Agricultural education prepares students for successful careers and a lifetime of informed choices regarding agriculture. Agricultural Education is a major in the Department of Agricultural and Resource Economics. CSU focuses on two delivery concentrations in Agricultural Education: Teacher Development for school-based agricultural education, and Agricultural Literacy. The program also offers a minor in Agricultural Literacy.

Learning Outcomes

The successful student will demonstrate:
• Competent knowledge of agricultural subject matter
• Ability to create instruction opportunities that are adapted to diverse learners in agricultural education
• Employment of innovative instructional methodologies and assessment techniques to promote learning in agriculture
• Effective program management and program evaluation techniques

Potential Occupations

Graduates in Agricultural Education are in demand to fill a fifteen-year shortage of agricultural teachers in Colorado and nationwide. Two-thirds of the CSU graduates have become teachers or administrators in public schools. Other graduates take agribusiness positions with seed, fertilizer, feed, machinery, or finance firms. Students are also prepared to teach in community or junior colleges, area vocational schools, and technical institutes. Participation in internships is required to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Some examples include: high school agriculture teacher, post-secondary vocational agriculture teacher, agribusiness or agriservice representative, cooperative extension agent, education specialist, 4-H association youth specialist, youth development specialist, science teacher.

A Bachelor of Science degree in Agricultural Education with a concentration in Teacher Development leads to teacher licensure by the State of Colorado. Teachers combine classroom, laboratory, and hands-on experiences to teach high school students about the myriad agricultural topics. The curriculum requires students to demonstrate a competent knowledge of educational theory and a broad-based understanding in agricultural content. Students combine practical experience and technical course work including animal science, plant science, agricultural mechanics, forestry, natural resources, horticulture, agricultural processing and supplies, and services in agriculture. Courses from biological sciences, liberal arts, and social sciences round out a student’s education. Students must apply to the Teacher Licensure Program in the School of Education after they have completed at least 30 college credits, usually during their sophomore or junior year. A few of the requirements for acceptance are: having at least a 2.750 cumulative GPA, completion of introductory education courses, and 20 hours of documented work experience with school-age children. This curriculum includes instructional methods and assessment, classroom management and technology, exceptionality, and courses specific to teaching in the agricultural field. All students are required to student teach for one semester.

Concentrations

• Teacher Development Concentration
• Agricultural Literacy Concentration

Major in Agricultural Education, Agricultural Literacy Concentration

An integral part of a complete agricultural education system is agricultural literacy. Agricultural literacy is the synthesis, instruction, and communication of basic information about agriculture to the public. Potential occupations may include assisting educators, producers, industry groups, and others to effectively incorporate information about agriculture into subjects being taught or examined in public and private forums. Agricultural literacy is education about agriculture. The agricultural literacy programming and training in this degree area will focus on a wide-range of ages (from early childhood to adult), audiences (rural, urban, ethnically diverse, etc.) and a variety of agriculture topics. Coursework includes technical agriculture and natural resources content knowledge, communications, philosophy, and human development. Students are required to complete an internship in agricultural literacy. Students graduating with a degree in Agricultural Education with a concentration in Agricultural Literacy would have to complete additional educational coursework in order to teach in public schools in Colorado.

Potential occupations for graduates of this concentration include working for industry, trade, or community organizations that promote and advocate for an agriculturally literate society.

Requirements

Effective Fall 2015

Freshman

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<tr>
<th>Course</th>
<th>AUCC</th>
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<td>AGED 220</td>
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<td>AGRI 192 or 292</td>
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<td>CHEM 107 or 111</td>
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<td>CO 150</td>
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<td>FSHN 125</td>
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<td>LIFE 102</td>
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<td>MATH 117</td>
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<td>MATH 118</td>
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<td>MATH 124</td>
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Agriculture Production Systems
Understanding Agricultural Education
Orientation to Agricultural Systems
Transfer Seminar
Food Animal Science
Introduction to Equine Science
Fundamentals of Chemistry (GT-SC2)
General Chemistry I (GT-SC2)
College Composition (GT-CO2)
Food and Nutrition in Health
Attributes of Living Systems (GT-SC1)
College Algebra in Context I (GT-MA1)
College Algebra in Context II (GT-MA1)
Logarithmic and Exponential Functions (GT-MA1)
### Major in Agricultural Education, Agricultural Literacy Concentration

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<th>Arts and Humanities</th>
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#### Sophomore

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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>FTEC 110</td>
<td>Food-From Farm to Table</td>
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<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
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<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
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<td>SOCR 100 or 240</td>
<td>General Crops, Introductory Soil Science</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>SPCM 207</td>
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#### Junior

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<tbody>
<tr>
<td>AGRI 116/EI 116</td>
<td>Plants and Civilizations (GT-SS3)</td>
<td>3E</td>
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<td>AGRI 270/EI 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
<td>3E</td>
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<td>AGRI 300</td>
<td>Issues in Agriculture</td>
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<tr>
<td>HORT 171/SOCR 171</td>
<td>Environmental Issues in Agriculture (GT-SS3)</td>
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Select one from the following courses:

<table>
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<tr>
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<tbody>
<tr>
<td>AGRI 330/PHIL 330</td>
<td>Agricultural and Food System Ethics</td>
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<td>PHIL 305E</td>
<td>Philosophical Issues in the Professions: Animal Science</td>
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<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
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<td>PHIL 345</td>
<td>Environmental Ethics</td>
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<td>ANEQ 250</td>
<td>Live Animal and Carcass Evaluation</td>
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<td>AREC 328</td>
<td>Small Agribusiness Management</td>
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<td>AREC 478</td>
<td>Agricultural Policy</td>
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<td>Writing Arguments (GT-CO3) Professional and Technical Communication (GT-CO3)</td>
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<td>JTC 419</td>
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| **Total Credits** | 30-31 |

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<td>Methods of Agricultural Literacy</td>
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<td>Introduction: Economics of Natural Resources</td>
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| **Total Credits** | 27-29 |

**Program Total Credits:** 120
Select 9 upper-division credits (300- to 400-level) from each of two pathways listed below, for a total of 18 credits. Select from the subject codes associated with each pathway, with approval of advisor.

- Animal Systems: ANEQ
- Plant Systems: BSPM, HORT, LAND, SOCR
- Agricultural Business: AREC
- Natural Resources and Environmental Systems: AREC 342, F, FW, NR, RS
- Food Products and Processing Systems: FSHN, FTEC
- Human Development: HDFS

Select enough elective credits to bring the program total to a minimum of 120-123 credits. At least 42 credits must be upper-division (300- to 400-level).

### Major Completion Map

#### Freshman

**Semester 1**

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<td>Agriculture Production Systems</td>
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<td>AGED 220</td>
<td>Understanding Agricultural Education</td>
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<td>Attributes of Living Systems (GT-SC1)</td>
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<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<td>ANEQ 102</td>
<td>Introduction to Equine Science</td>
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#### Sophomore

**Semester 3**

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<td>AREC 202</td>
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<td>HDIFS 101</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>Historical Perspectives</td>
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### Major in Agricultural Education, Agricultural Literacy Concentration

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<td>SPCM 207</td>
<td>Public Argumentation</td>
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<td></td>
<td>Global and Cultural Awareness</td>
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**Junior**

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<td>Agricultural Policy</td>
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<td>AGRI 116/IE 116</td>
<td>Plants and Civilizations (GT-SS3)</td>
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<td>AGRI 270/IE 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
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<td>AGRI 300</td>
<td>Issues in Agriculture</td>
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<td>HORT 171/SOCR 171</td>
<td>Environmental Issues in Agriculture (GT-SS3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>Writing Arguments (GT-CO3)</td>
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<td>Live Animal and Carcass Evaluation</td>
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<td>HORT 100</td>
<td>Horticultural Science</td>
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<td>JTC 419</td>
<td>Food and Natural Resources Communication</td>
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<td>AGRI 330/PHIL 330</td>
<td>Agricultural and Food System Ethics</td>
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<td>PHIL 305E</td>
<td>Philosophical Issues in the Professions: Animal Science</td>
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<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
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<td>PHIL 345</td>
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**Senior**

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<tr>
<td>AGED 330</td>
<td>Program Design and Evaluation in Ag. Literacy</td>
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<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
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<td>Upper-Division Department Electives (See List on Concentration Requirements Tab)</td>
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**Program Total Credits:** 120
Major in Agricultural Education,
Teacher Development Concentration

Teacher development in school-based agricultural education is delivered in a three-part model: classroom, experiential learning, and leadership development. Teacher development in school-based agriculture education is education in agriculture. In Colorado, agricultural education is delivered through approximately 100 secondary programs located throughout the state. Over 5,600 young people are enrolled in agricultural education programs in Colorado. Over 5,600 young people are enrolled in agricultural education programs in Colorado. Graduates in the Teacher Development concentration take classes in agriculture and in the Center for Educator Preparation (http://www.cep.chhs.colostate.edu) (CEP). A Bachelor of Science degree in Agricultural Education Teacher Development leads to teacher licensure by the State of Colorado. The curriculum requires students to demonstrate a competent knowledge of educational theory and a broad-based understanding in agricultural content. Students combine practical experience and technical course work including animal science, plant science, agricultural mechanics, natural resources, food products and processing, and agriculture business. Students must have a 2.75 GPA, pass the PLACE assessment for Agriculture and Renewable Natural Resources licensure and complete a student teaching semester internship.

Potential occupations: Graduates in the Teacher Development concentration are in demand to fill the 18 year shortage in agricultural education teachers. Two-thirds of program graduates take teaching and administrative positions in public schools. Other graduates fill positions in agribusiness, feed, seed, fertilizer, machinery and finance companies, and human resource positions in agribusiness companies. Additionally, graduates often pursue advanced degrees in teaching agriculture and work at community colleges, in extension, or as curriculum specialists in organizations.

Requirements

Effective Fall 2015

Freshman

<table>
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<tr>
<th>Course</th>
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<tr>
<td>AGED 220</td>
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<td>Technical Tool Applications in Ag Education</td>
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<td>AGED 320</td>
<td>Technology Lab for Ag Education</td>
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<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems Transfer Seminar</td>
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<tr>
<td>ANEQ 101 or 102</td>
<td>Food Animal Science Introduction to Equine Science</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>Select four credits from the following:</td>
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<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<td>&amp; BZ 111</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>MATH 117</td>
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<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<td>SOCR 100</td>
<td>General Crops</td>
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Sophomore

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<td>ANEQ 250</td>
<td>Live Animal and Carcass Evaluation</td>
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<td>AGED 241</td>
<td>Plumbing and Electrical Applications in Ag Ed</td>
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<tr>
<td>AGED 244</td>
<td>Power Systems in Agricultural Education</td>
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<td>Select 3 credits from the following Natural Resource/Environmental System Electives:</td>
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<td>AREC 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
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<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
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<td>Course Code</td>
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<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
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<tr>
<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
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<tr>
<td>FW 260</td>
<td>Principles of Wildlife Management</td>
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<tr>
<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>Arts and Humanities</td>
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<td>Food Products and Processing Systems Elective</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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**Junior**

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<tr>
<td>AGED 420</td>
<td>Developing School-Based Ag Education Programs</td>
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<tr>
<td>AREC 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
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<tr>
<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
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<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
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<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
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<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
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<td>Select one of the following courses:</td>
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<tr>
<td>AREC 310</td>
<td>Agricultural Marketing</td>
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<td>AREC 328</td>
<td>Small Agribusiness Management</td>
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<td>AREC 408</td>
<td>Agricultural Finance</td>
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<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
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<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
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<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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<td>Instruction I-Individualization/Management</td>
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<td>Practicum-Instruction I</td>
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<td>Horticultural Science</td>
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<td>Advanced Writing</td>
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**Senior**

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<tr>
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<td>EDCT 485</td>
<td>Student Teaching</td>
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<td>EDCT 492</td>
<td>Seminar-Professional Relations</td>
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<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
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<td>EDUC 486E</td>
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**Program Total Credits:**

1 Select course(s) in consultation with advisor.
## Major Completion Map

### Freshman

#### Semester 1

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<td>AGED 240</td>
<td>Technical Tool Applications in Ag Education</td>
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Select one course from the following:
- AGRI 192  Orientation to Agricultural Systems
- AGRI 292  Transfer Seminar

Select one course from the following:
- ANEQ 101  Food Animal Science
- ANEQ 102  Introduction to Equine Science
- AREC 202  Agricultural and Resource Economics (GT-SS1)
- SOCR 100  General Crops

Select a minimum of three credits from the following:
- MATH 117  College Algebra in Context I (GT-MA1) 1B
- MATH 118  College Algebra in Context II (GT-MA1) 1B
- MATH 124  Logarithmic and Exponential Functions (GT-MA1) 1B
- MATH 141  Calculus in Management Sciences (GT-MA1) 1B
- MATH 155  Calculus for Biological Scientists I (GT-MA1) 1B
- MATH 160  Calculus for Physical Scientists I (GT-MA1) 1B

Total Credits: 18-19

#### Semester 2

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<td>Technology Lab for Ag Education</td>
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Select four credits from the following:
- BZ 110  Principles of Animal Biology (GT-SC2) 3A
- BZ 111  Principles of Animal Biology (GT-SC2) 3A
- BZ 120  Principles of Plant Biology (GT-SC1) 3A
- LIFE 102  Attributes of Living Systems (GT-SC1) 3A
- CHEM 107  Fundamentals of Chemistry (GT-SC2) 3A
- CO 150  College Composition (GT-CO2) X 1A 3

Arts and Humanities 3B 3

Total Credits: 15

### Sophomore

#### Semester 3

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<tr>
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<td>Live Animal and Carcass Evaluation</td>
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<tr>
<td>AGED 241</td>
<td>Plumbing and Electrical Applications in Ag Ed</td>
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<td>AGED 244</td>
<td>Power Systems in Agricultural Education</td>
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Agricultural Science Elective 3

Historical Perspectives 3D 3

Global and Cultural Awareness 3E 3

CHEM 107 must be completed by the end of Semester 3. X

Total Credits: 14

#### Semester 4

Select three credits from the following:
- AREC 240  Issues in Environmental Economics (GT-SS1) 3C
- AREC 340  Introduction: Economics of Natural Resources
- ECON 340
- AREC 342  Water Law, Policy, and Institutions
- FW 104  Wildlife Ecology and Conservation (GT-SC2) 3A
- FW 260  Principles of Wildlife Management
- RS 300  Rangeland Conservation and Stewardship
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<th>Course Code</th>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
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<td></td>
<td>Food Products and Processing Systems Electives</td>
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**Junior**

**Semester 5**

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<tr>
<td>AREC 305</td>
<td>Agricultural and Resource Enterprise Analysis</td>
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<td>AREC 310</td>
<td>Agricultural Marketing</td>
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<td>AREC 328</td>
<td>Small Agribusiness Management</td>
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<td>AREC 408</td>
<td>Agricultural Finance</td>
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<td>Schooling in the United States (GT-SS3)</td>
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<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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<tr>
<td>Advanced Writing</td>
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<td>AGED 220</td>
<td>Must be completed by the end of Semester 5.</td>
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<tr>
<td>Acceptance into teacher licensure must be completed by the end of Semester 5</td>
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</table>

| Total Credits                                            |          |             |       | 15      |

**Semester 6**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
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<tbody>
<tr>
<td>AGED 420</td>
<td>Developing School-Based Ag Education Programs</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Select three credits not previously taken from the following courses:</td>
<td></td>
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<tr>
<td>AREC 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AREC 340</td>
<td>Introduction: Economics of Natural Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 340</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
<td></td>
<td></td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>FW 260</td>
<td>Principles of Wildlife Management</td>
<td></td>
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</tr>
<tr>
<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
<td></td>
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<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td></td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td></td>
<td>X</td>
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<tr>
<td>EDUC 386</td>
<td>Practicum-I-Instruction I</td>
<td></td>
<td>X</td>
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<tr>
<td>HORT 100</td>
<td>Horticultural Science</td>
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</table>

| Total Credits                                            |          |             |       | 16      |

**Senior**

**Semester 7**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EDCT 425</td>
<td>Methods/Materials in Agricultural Education</td>
<td></td>
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<tr>
<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
<td></td>
<td></td>
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<td>1</td>
</tr>
<tr>
<td>EDCT 492</td>
<td>Seminar-Professional Relations</td>
<td></td>
<td></td>
<td>4C</td>
<td>1</td>
</tr>
<tr>
<td>Agricultural Science Electives (See List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>5-6</td>
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</tr>
</tbody>
</table>

| Total Credits                                            |          |             |       | 15-16  |

**Semester 8**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDCT 485</td>
<td>Student Teaching</td>
<td>X</td>
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<td>4A,4B,4C</td>
<td>11</td>
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<tr>
<td>EDCT 492</td>
<td>Seminar-Professional Relations</td>
<td>X</td>
<td></td>
<td>4C</td>
<td>1</td>
</tr>
<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td></td>
<td></td>
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</table>

| Total Credits                                            |          |             |       | 12     |

| Program Total Credits:                                   |          |             |       | 120-123|


Major in Environmental and Natural Resource Economics

The Environmental and Natural Resource Economics major prepares students to apply economic tools to evaluate the allocation and utilization of natural resources and the management of the natural environment. Economic analysis provides a strong basis to guide societal choices that directly and indirectly affect our environment. Economic theory provides a framework for understanding both environmental and natural resource issues, predicting the likely effects of government policies and regulations, and devising solutions to pressing economic and environmental problems.

This major differentiates from other programs of study that address natural resource management in that it focuses on weighing the private and public implications of choices that we make ranging from a local through a global scale. To strengthen their technical training, students majoring in environmental and natural resource economics can simultaneously complete a second major in Natural Resource Management or other more specialized majors offered through the Warner College of Natural Resources (http://warnercnr.colostate.edu).

Learning Outcomes

Successful students will demonstrate:

- Technical competency including appropriate use of economic theory in formulating analytical problems, identifying and gathering appropriate data, and employing appropriate economic methods to analyze those problems, utilizing appropriate available computer technology.
- Ability to solve real-world problems beyond the pedagogical context. Students will be able to identify a problem and its scope, evaluate resources available to address the problem, formulate alternative solutions, and select the solution(s) most consistent with a stated objective.
- Proficiency in oral and written communication including the ability to communicate critically and analytically at a professional level.

Potential Occupations

Environmental and resource economists are employed in a wide range of fields from education and research to business and government. Profit and non-profit organizations employ economists in overseas and community development, international relations, and environmental and conservation analyses. Participation in internships, volunteer activities, and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who seek further specialization are prepared to pursue advanced studies.

Some examples include, but are not limited to, energy resource analyst, environmental researcher/analyst, resource policy analyst, natural resource analyst, environmental pollution analyst, environmental policy analyst, economic analyst/forecaster, land use planner, overseas development specialist, rural community organizer, community development specialist, financial analyst, foreign trade analyst, market forecaster, and extension agent.

Requirements

Effective Fall 2015

Freshman

AGRI 192 Orientation to Agricultural Systems
AREC 202 Agricultural and Resource Economics (GT-SS1) 3C 3
Select four credits from the following:
BZ 110 Principles of Animal Biology (GT-SC2) 3A 4
& BZ 111
BZ 120 Principles of Plant Biology (GT-SC1) 3A
LIFE 102 Attributes of Living Systems (GT-SC1) 3A
CO 150 College Composition (GT-CO2) 1A 3
CS 110 Personal Computing 4
ECON 204 Principles of Macroeconomics (GT-SS1) 3C 3
MATH 117 College Algebra in Context I (GT-MA1) 1B 1
MATH 118 College Algebra in Context II (GT-MA1) 1B 1
MATH 124 Logarithmic and Exponential Functions (GT-MA1) 1B
Arts and Humanities 3B 3
Biological and Physical Sciences 3A 3
Natural Resource or Agriculture Elective 3
Total Credits 30

Sophomore

ACT 205 Fundamentals of Accounting 3
MATH 141 Calculus in Management Sciences (GT-MA1) 1B 3
SPCM 200 Public Speaking 3
Advanced Writing 2 3
Foundations and Perspectives 3B, 3D, 3E 9
Natural Resource or Agriculture Elective 1 3
Electives 6

Total Credits 30

Junior

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AREC 240/ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td>3C 3</td>
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<tr>
<td>AREC 305 or FIN 305</td>
<td>Agricultural and Resource Enterprise Analysis Fundamentals of Finance</td>
<td>3</td>
</tr>
<tr>
<td>AREC 335/ECON 335</td>
<td>Introduction to Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>AREC 375 or POLS 361</td>
<td>Agricultural Law U.S. Environmental Politics and Policy</td>
<td>3</td>
</tr>
<tr>
<td>ECON 306</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
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</table>

Natural Resource or Agriculture Electives 1 6
Electives 3

Total Credits 30

Senior

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AREC 341</td>
<td>Environmental Economics</td>
<td>3</td>
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<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
<td>3</td>
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<tr>
<td>AREC 346/ECON 346</td>
<td>Economics of Outdoor Recreation</td>
<td>3</td>
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<td>AREC 440</td>
<td>Advanced Environmental and Resource Economics</td>
<td>4A,4C 3</td>
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<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
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<tr>
<td>AREC 478</td>
<td>Agricultural Policy</td>
<td>4B 3</td>
</tr>
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<td>ECON 304</td>
<td>Intermediate Macroeconomics</td>
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<td>AREC or ECON Electives 2</td>
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Natural Resource or Agriculture Elective 1 3
Electives 3

Total Credits 30

Program Total Credits: 120

1 Select from courses with AGED, AGRI, ANEQ, BSPM, BZ, CBE, CHEM, CIVE, ECOL, ESS, FW, F, GEOL, GES, HORT, LAND, LIFE, NR, NRRT, RS, SOCR, or WR subject codes.
2 Select credits from AREC and/or ECON courses.
3 Select enough elective credits to bring program total to 120 credits with a minimum of 42 upper-division (300- to 400-level) credits.

Major Completion Map

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AGRI 192</td>
<td>Orientation to Agricultural Systems</td>
<td></td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1) X</td>
<td>3C</td>
<td>3</td>
<td></td>
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<tr>
<td>CS 110</td>
<td>Personal Computing</td>
<td></td>
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<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1) X</td>
<td>1B</td>
<td>1</td>
<td></td>
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<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1) 1B</td>
<td></td>
<td>1</td>
<td></td>
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<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1) 1B</td>
<td></td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
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</table>

Total Credits 14

Select four credits from the following:

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<tr>
<td>Course Code</td>
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<td>Credits</td>
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<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>3A</td>
<td></td>
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<tr>
<td>BZ 111</td>
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<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)</td>
<td>3</td>
<td></td>
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</table>

**AUCC 1B (MATH) must be completed by the end of Semester 2. X**

**Total Credits: 16**

### Sophomore

**Semester 3**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ACT 205</td>
<td>Fundamentals of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
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**Total Credits: 15**

**Semester 4**

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<tbody>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>3</td>
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<td></td>
<td>Advanced Writing</td>
<td>2</td>
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<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
</tr>
<tr>
<td></td>
<td>Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)</td>
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<tr>
<td></td>
<td>Elective</td>
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</table>

**ACT 205, ECON 204, and CS 110 must be completed by the end of Semester 4. X**

**Total Credits: 15**

### Junior

**Semester 5**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AREC 240/</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td>3C</td>
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<td>ECON 240</td>
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<tr>
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<td>Select one course from the following:</td>
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<tr>
<td></td>
<td>AREC 305  Agricultural and Resource Enterprise Analysis</td>
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<tr>
<td></td>
<td>FIN 305   Fundamentals of Finance</td>
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<tr>
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<td>Select one course from the following:</td>
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<tr>
<td></td>
<td>AREC 375  Agricultural Law</td>
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<tr>
<td></td>
<td>POLS 361  U.S. Environmental Politics and Policy</td>
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</tr>
<tr>
<td></td>
<td>STAT 301  Introduction to Statistical Methods</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)</td>
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**Total Credits: 15**

**Semester 6**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AREC 335/</td>
<td>Introduction to Econometrics</td>
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<tr>
<td>ECON 335</td>
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<tr>
<td>AREC 340/</td>
<td>Introduction: Economics of Natural Resources</td>
<td>X</td>
</tr>
<tr>
<td>ECON 340</td>
<td></td>
<td></td>
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<tr>
<td>ECON 306</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Natural Resource or Agricultural Elective (See allowable subject codes on Program Requirements Tab)</td>
<td>3</td>
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<tr>
<td></td>
<td>Elective</td>
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</table>

**Total Credits: 15**
**Master of Science in Agricultural and Resource Economics, Plan A**

The Master of Science (M.S.) degree certified by the Department of Agricultural and Resource Economics (Plan A) is a program of study consisting of 30 credit hours, including the preparation and defense of an original M.S. research thesis (up to 6 credits of research work). Completion of the M.S. in DARE implies a mastery of basic microeconomic theory and econometrics, with an ability to conduct applied economic research under supervision. Graduates are competitive for employment in the public and private sectors as analysts, consultants, researchers, and other occupations involving analytical skills. Our students have gone on to rewarding careers in Federal agencies, NGO’s, and the private sector. The M.S. in DARE (Plan A) provides a solid foundation in microeconomics and quantitative methods, coupled with direct experience in applied economic research. This course of study represents an excellent basis for those inclined to pursue doctoral degrees, and many of our students have entered our own Ph.D. program or other top-level institutions across the country.

### Requirements
#### Effective Fall 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AREC 506/</td>
<td>Applied Microeconomic Theory</td>
<td>3</td>
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<tr>
<td>ECON 506</td>
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<tr>
<td>AREC 507</td>
<td>Applied Welfare and Policy Analysis</td>
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</tr>
<tr>
<td>AREC 535/</td>
<td>Applied Econometrics</td>
<td>3</td>
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<td>ECON 535</td>
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<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>AREC 508</td>
<td>Optimization Methods for Applied Economics</td>
<td>3</td>
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</table>

### Field Courses

Select one group from the following: 4-6

- **Group A:**
  - AREC 540/ ECON 540: Environmental and Natural Resource Economics
  - AREC 541/ ECON 541: Environmental Economics

- **Group B:**
  - AREC 605: Agricultural Production and Cost Analysis
  - AREC 610: Agricultural Marketing and Demand Analysis

### Electives

1. Electives  1

### Thesis

- AREC 699: Thesis  6

Total Credits: 30

A minimum of 30 credits are required to complete this program.

### Master of Science in Agricultural and Resource Economics, Plan B

The Master of Science (M.S.) degree certified by the Department of Agricultural and Resource Economics (Plan B) is a program of study consisting of 30 credit hours in coursework, plus the preparation of a technical paper (no formal credit allowed). Completion of the M.S. in DARE implies a mastery of basic microeconomic theory and econometrics, with an ability to conduct applied economic research under supervision. Graduates are competitive for employment in the public and private sectors as analysts, consultants, researchers, and other occupations involving analytical skills. Our students have gone

**Select courses with approval of advisor and committee.**
on to rewarding careers in Federal agencies such as the National Park Service, U.S. Department of Agriculture, State Departments of Agriculture, NGO’s, and the private sector. The M.S. in DARE (Plan B) provides a solid foundation for the students wishing to pursue higher level graduate studies (Ph.D.), but it is particularly well suited for students seeking to directly enter the workforce, or international students planning to return to their own country after obtaining the degree.

**Requirements**

**Effective Fall 2013**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AREC 506/ECON 506</td>
<td>Applied Microeconomic Theory</td>
<td>3</td>
</tr>
<tr>
<td>AREC 507</td>
<td>Applied Welfare and Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AREC 535/ECON 535</td>
<td>Applied Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>Methods Courses</td>
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<tr>
<td>Select one from the following:</td>
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<tr>
<td>AREC 615</td>
<td>Optimization Methods for Applied Economics</td>
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<tr>
<td>AREC 635/ECON 635</td>
<td>Econometric Theory I</td>
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<tr>
<td>Field Courses</td>
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<td>4-6</td>
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<tr>
<td>Select one group from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A:</td>
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<tr>
<td>AREC 540/ECON 540</td>
<td>Environmental and Natural Resource Economics</td>
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</tr>
<tr>
<td>AREC 541/ECON 541</td>
<td>Environmental Economics</td>
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</tr>
<tr>
<td>Group B:</td>
<td></td>
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<tr>
<td>AREC 605</td>
<td>Agricultural Production and Cost Analysis</td>
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<tr>
<td>AREC 610</td>
<td>Agricultural Marketing and Demand Analysis</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Electives ¹</td>
<td></td>
<td></td>
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<tr>
<td>Research</td>
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</tr>
<tr>
<td>Technical Paper Required ²</td>
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<tr>
<td>Total Credits</td>
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</tr>
</tbody>
</table>

A minimum of 30 credits are required to complete this program.

¹ Select courses with approval of advisor.
² Students in Plan B must write a technical paper.

**Minor in Agricultural Literacy**

The minor identifies students who have completed an integrated set of courses in agricultural education including an agricultural literacy internship. These experiences help round-out a student’s education for those who are interested in working in a broad range of fields where a background in agricultural literacy would be beneficial.

**Requirements**

**Effective Fall 2014**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Core Courses</td>
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<tr>
<td>AGED 110</td>
<td>Agriculture Production Systems</td>
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<tr>
<td>AGED 220</td>
<td>Understanding Agricultural Education</td>
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<td>AGED 330</td>
<td>Program Design and Evaluation in Ag. Literacy</td>
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<td>AGED 430</td>
<td>Methods of Agricultural Literacy</td>
<td>3</td>
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<td>AGED 487</td>
<td>Internship</td>
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<td>Selected Courses</td>
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<td>Select 9 credits, including a minimum of 4 upper-division (300- to 400-level) credits, from the following subject codes:</td>
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<tr>
<td>AGED, AGRI, ANEQ, AREC, F, FSHN, FTEC, FW, HDFS, HORT, NR, RS, SOCR</td>
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<td>Total Credits</td>
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</table>

**Minor in Agricultural and Resource Economics**

The minor identifies students who have completed an integrated set of courses in agricultural and resource economics. Areas of study in the minor include agricultural production management, financial management, marketing management, international development and trade, natural resources, and environmental economics.

**Requirements**

**Effective Fall 1985**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<tr>
<td>Upper Division</td>
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<tr>
<td>Agricultural Economics Electives</td>
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<tr>
<td>Additional Course ¹</td>
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</tbody>
</table>

¹ To be determined in consultation with minor program coordinator.
Ph.D. in Agricultural and Resource Economics

The Doctor of Philosophy (Ph.D.) degree certified by the Department of Agricultural and Resource Economics is a program of study consisting of 72 credit hours (42 earned following an M.S. degree) plus a substantial work of original research in the form of a dissertation. Completion of the Ph.D. in DARE generally signifies a mastery of advanced microeconomic theory and quantitative methods, with a particular expertise in either Agricultural Economics or Natural Resource and Environmental Economics. Ph.D. graduates from DARE are experts in applied economics and are trained to develop and execute innovative research programs, teach undergraduate and graduate level economics courses, and present theoretical and applied economic concepts and results to a wide variety of audiences. Individuals holding a Ph.D. from DARE have gone on to succeed in a variety of positions at universities, in the public institution sector (e.g. USDA, ERS), and private enterprises including consulting firms.

Requirements

Effective Fall 2013

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>AREC 506/ ECON 506</td>
<td>Applied Microeconomic Theory</td>
<td>3</td>
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<tr>
<td>AREC 570/ ECON 530</td>
<td>Methodology of Economic Research</td>
<td>3</td>
</tr>
<tr>
<td>AREC 615</td>
<td>Optimization Methods for Applied Economics</td>
<td>3</td>
</tr>
<tr>
<td>AREC 635/ ECON 635</td>
<td>Econometric Theory I</td>
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<td>AREC 706/ ECON 706</td>
<td>Microeconomic Analysis II</td>
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<td>AREC 735/ ECON 735</td>
<td>Econometric Theory II</td>
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<td>AREC 770</td>
<td>Advanced Methods in Applied Economics</td>
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<td>ECON 501</td>
<td>Quantitative Methods for Economists</td>
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<td>Field Courses</td>
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<td>Select one from the following:</td>
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<tr>
<td>AREC 705 &amp; AREC 710</td>
<td>Advanced Production and Technological Change and Advanced Agricultural Marketing Issues</td>
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<tr>
<td>AREC 740</td>
<td>Advanced Natural Resource Economics</td>
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Research and Dissertation

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Exams

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Master Degree Credit

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Total Credits

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<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>72</td>
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</table>

A minimum of 72 credits are required to complete this program.

1. Select courses with approval of advisor and committee.
2. Students must pass the written Ph.D. Qualifying Examinations in Quantitative Methods and in Microeconomics, the field Examination, the preliminary Oral Examination, and the final Oral Examination.
3. Student may apply an earned Master’s degree for up to 30 credits toward the PhD requirements conditioned on satisfying course requirements for the Agricultural and Resource Economics Master of Science Program.

Department of Animal Sciences

Office in Animal Sciences Building, Room 150
(970) 491-5177
ansci.colostate.edu (http://ansci.colostate.edu)

Kevin R. Pond, Professor and Head

Undergraduate

Major

• Major in Animal Science
• Major in Equine Science

Certificate

• Certificate in Animal Nutrition
• Certificate in Meat Science

Pre-professional Veterinary Medicine Requirements

Pre-veterinary medical students with specific interest in animal science or equine science may follow either the Animal Science or Equine Science major. Maximum flexibility in career direction may be obtained by meeting the requirements for a degree in animal science or equine science while simultaneously completing the admission requirements for the professional veterinary medical program. The Food Animal Veterinary Career Incentive Program (FAVCIP) is available for Animal Science majors.

Graduate

Graduate Programs in Animal Sciences

The department offers graduate programs leading to the Master of Science and the Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin, and the department’s website (http://ansci.agsci.colostate.edu).
Master Programs

• Master of Science in Animal Sciences, Plan A
• Master of Science in Animal Sciences, Plan B*

Ph.D.

• Ph.D. in Animal Sciences*

* Please see department for program of study.

Courses

Animal Sciences (ANEQ)

ANEQ 101 Food Animal Science Credits: 4 (3-3-0)
Course Description: Development, organization, trends and management of the livestock industry; emphasis on applying science to the production of food and fiber.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 102 Introduction to Equine Science Credits: 4 (3-2-0)
Course Description: Equine physiology, production systems and management systems as it pertains to the equine industry and management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 104 Values, Culture, and Food Animal Agriculture Credits: 3 (3-0-0)
Also Offered As: PHIL 104.
Course Description: Evolution of the social values and cultural understandings shaping modern animal agriculture; current problems in animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with a freshman or sophomore standing. Credit not allowed for both ANEQ 104 and PHIL 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 105 Introduction to Large Animal Anatomy Credit: 1 (0-2-0)
Course Description: Basic gross animal anatomy.
Prerequisite: None.
Registration Information: Animal Science or Equine Science majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201A Preparation of Horses for Competition: Western Credits: 2 (0-4-0)
Course Description: Development of skills to prepare and present horses in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201B Preparation of Horses for Competition: English Credits: 2 (0-4-0)
Course Description: Development of skills to prepare and present horses in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 202 Safety in Horse Handling Credit: 1 (1-0-0)
Course Description: Horse handling safety skills.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

ANEQ 203 Equine Management Credits: 2 (1-2-0)
Course Description: Equine management and care techniques with hands-on experience.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 204 Equine Facilities Management Credits: 3 (2-2-0)
Course Description: Understanding of all aspects required to manage an equine facility coupled with hands-on experience.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 220 Feeds and Feeding Credits: 2 (2-0-0)
Course Description: Advantages and limitations of feedstuffs; nutrients and their functions; and feed practices for all physiological stages of livestock.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 230 Farm Animal Anatomy and Physiology Credits: 3 (3-0-0)
Course Description: Basic concepts of farm animal anatomy and physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: LIFE 100 to 199 - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 230 and ANEQ 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 249  Introduction to the Trail Riding Industry  Credit: 1 (0-2-0)
Course Description: Emphasis on horse care, regulations, first aid, health, training, and hosting a trail ride.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 250  Live Animal and Carcass Evaluation  Credits: 3 (1-4-0)
Course Description: Growth, development, and value-determining characteristics of market animals.
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 286  Livestock Practicum  Credits: 2 (0-0-0)
Course Description: Livestock breeds and terminology; classification of feedstuffs; livestock handling and care; basic animal management techniques, hands-on experience.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 292  Equine Industry Seminar  Credit: 1 (1-0-0)
Course Description: Overview of the equine industry and industry careers.
Prerequisite: ANEQ 101.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 293  Animal Science Career Exploration Seminar  Credit: 1 (0-0-1)
Course Description: Better understanding of individual abilities, strengths and passions is imperative to be successful in a career search as well as to succeeding in life. Designed to help students explore who they are individually, how they might fit into a career or graduate programs in animal agriculture; how to prepare marketing materials to be competitive in selection processes.
Prerequisite: ANEQ 101.
Registration Information: This is a partial semester course. Sophomore standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300A  Topics in Animal Sciences: Livestock Handling  Credit: 1 (1-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300B  Topics in Animal Sciences: Livestock Entomology  Credit: 1 (1-0-0)
Also Offered As: BSPM 300.
Course Description: Identification, biology and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 300B and BSPM 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300E  Topics in Animal Sciences: Family Ranching  Credit: 1 (1-0-0)
Course Description: Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300N  Topics in Animal Sciences: Seedstock Merchandising  Credits: 2 (2-0-0)
Course Description: Overview of beef seedstock industry, including hands-on selection, management, and marketing of cattle.
Prerequisite: None.
Restriction: Must be a: Junior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Course required to apply for seedstock team.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300R  Topics in Animal Sciences: Calving and Calf Care  Credits: 2 (1-2-0)
Course Description: Prerequisite: (ANEQ 310) and (ANEQ 478 and ANEQ 510).
Registration Information: Senior standing. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 300T  Topics in Animal Sciences: Event, Fair, and Show Management  Credit: 1 (1-0-0)
Course Description: Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Credit not allowed for both ANEQ 300T and ANEQ 358.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 300U Topics in Animal Sciences: Seedstock Sale Management Credits: 2 (2-0-0)
Course Description: Develop, plan, and implement an effective seedstock cattle sale based on genetic information, customer service principles, and client relationships.
Prerequisite: ANEQ 300N.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300W Topics in Animal Sciences: Equine Manure Management Credit: 1 (1-0-0)
Course Description: Practices which maximize the benefits of manure to soils and crops while minimizing hazards to air and water quality; complying with regulations.
Prerequisite: ANEQ 101 or ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 305 Functional Large Animal Anatomy/Physiology Credits: 3 (3-0-0)
Course Description: Concepts of large animal anatomy and physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: (LIFE 100 to 199 - at least 3 credits) and (CHEM 107 or CHEM 111).
Restriction: .
Registration Information: Credit not allowed for both ANEQ 305 and ANEQ 230.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 310 Animal Reproduction Credits: 3 (3-0-0)
Course Description: Anatomy and physiology of the reproductive system; causes of reproductive failure in farm animals; methods of improving reproductive performance.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 312 Animal Ultrasonography Credits: 2 (1-2-0)
Course Description: Fundamentals and application of using ultrasound in farm animals; basic reproductive technologies; utilizing ultrasound as a management tool.
Prerequisite: (ANEQ 230 or ANEQ 305) and (ANEQ 310).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 313 Prevention and Control of Livestock Diseases Credits: 3 (3-0-0)
Also Offered As: VS 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Junior or senior standing. Credit not allowed for both ANEQ 313 and VS 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 315 Equine Behavior Credits: 2 (1-2-0)
Course Description: Equine behaviors related to training and learning.
Prerequisite: ANEQ 102.
Registration Information: Sophomore or higher standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 320 Principles of Animal Nutrition Credits: 4 (3-3-0)
Course Description: Understanding of nutrients and nutrient function required to support animal life through all physiological states.
Prerequisite: (ANEQ 230 or BMS 300 or BMS 360 or ANEQ 305) and (CHEM 100 to 199 - at least 3 credits).
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 322 Pet Nutrition Credits: 2 (2-0-0)
Course Description: Nutrients, nutrient requirements, feeding practices, food sources and management for companion animals (dogs, cats, birds, fish, reptiles, etc.).
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 323 Zoo Nutrition Credits: 2 (2-0-0)
Course Description: Unique nutritional requirements of mammalian, avian, and reptile captive wild animals; management protocols needed.
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 325 Equine Exercise Physiology Credits: 2 (2-0-0)
Course Description: Overview of the main aspects of equine exercise physiology.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 328 Foundations in Animal Genetics Credits: 3 (3-0-0)
Course Description: Foundational information of the influence of the genome and its genes on qualitative and quantitative traits in animal populations.
Prerequisite: (ANEQ 101 or ANEQ 102) and (LIFE 102).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 330 Principles of Animal Breeding Credits: 3 (3-0-0)
Course Description: Genetic principles underlying animal improvement; elementary population genetics; heritability; selection response; mating systems; DNA markers.
Prerequisite: (BZ 350 or ANEQ 328 or SOCR 330) and (STAT 200 to 279 - at least 3 credits or STAT 300 to 379).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 334 Principles of Equine Genetics Credits: 3 (3-0-0)
Course Description: Principles of selection and genetic improvement of horses, including economically relevant qualitative and quantitative traits.
Prerequisite: (ANEQ 102) and (BZ 350 or ANEQ 328 or SOCR 330) and (STAT 301 or STAT 307).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 340 Horse Training and Sale Preparation I Credits: 3 (0-6-0)
Course Description: Practical training skills using a yearling or two year old: in-hand, restraint, ground driving, lungeing, first rides, stable management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 341 Horse Training and Sale Preparation II Credits: 3 (0-6-0)
Course Description: Skills in training for specific riding maneuvers, conditioning, and fitting for sale.
Prerequisite: ANEQ 340.
Registration Information: Additional time outside of class required on weekends.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 344 Principles of Equine Reproduction Credits: 4 (3-2-0)
Course Description: Principles of reproduction and reproductive management of the mare and stallion.
Prerequisite: (ANEQ 102) and (ANEQ 230 or BMS 300 or ANEQ 305).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 345 Principles of Nutrition: Equine Applications Credits: 3 (3-0-0)
Course Description: Principles of nutrition; application in feeding horses in different physiological states to promote health and wellness.
Prerequisite: (ANEQ 102) and (ANEQ 230 or BMS 300 or ANEQ 305) and (CHEM 100 to 199 - at least 3 credits and MATH 100 to 499 - at least 3 credits).
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 346 Equine Disease Management Credits: 4 (3-2-0)
Course Description: Normal and abnormal body structures and functions of major systems of the horse. Recognition of main diseases, causes, prevention and treatments.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 348 Equine Training Techniques Credits: 2 (1-2-0)
Course Description: Training techniques in multiple riding disciplines.
Prerequisite: ANEQ 315.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 349 Packing and Outfitting Credits: 2 (1-2-0)
Course Description: Business aspects of outfitting/packing the horse; hitches, knots, horse care; planning pack trips, setting up camp.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips (Overnight pack trip).
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 351 Techniques in Therapeutic Riding Credits: 2 (1-2-0)
Course Description: Equine assisted activities; therapeutic horseback riding, hippotherapy, driving/vaulting, mental health treatments, programs for youth at risk.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 352 Introduction to Horse Evaluation Credits: 2 (0-4-0)
Course Description: Criteria and techniques for evaluation of horses; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 353  Advanced Horse Evaluation  Credits: 3 (0-6-0)
Course Description: Advanced criteria/techniques for horse evaluation; logical decision process development to establish comparative value; intercollegiate competition.
Prerequisite: ANEQ 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 354  Introduction to Livestock Evaluation  Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of livestock; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 355  Advanced Livestock Evaluation  Credit: 1 (0-9-0)
Course Description: Advanced criteria and techniques for evaluation of livestock; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 354.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 356  Introduction to Dairy Evaluation  Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of dairy cattle; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 357  Advanced Dairy Evaluation  Credits: 2 (0-4-0)
Course Description: Advanced criteria/techniques for evaluation of dairy cattle; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 358  Equine Event and Sales Management  Credits: 2 (2-0-0)
Course Description: Advanced criteria and techniques for evaluation of dairy cattle; establishing comparative value; participating in intercollegiate competition.
Prerequisite: None.
Registration Information: Credit not allowed for both ANEQ 358 and ANEQ 300T.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 359  Equine Sales Production  Credits: 2 (0-4-0)
Course Description: Emphasizes skills necessary to host and evaluate an equine sale.
Prerequisite: ANEQ 358.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 360  Principles of Meat Science  Credits: 3 (3-0-0)
Course Description: Structure, composition, and biology of muscle and associated tissues; wholesomeness, nutritive value, and palatability of beef, pork, and lamb.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 361 Introduction to Meat Product Evaluation Credit: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of meat products; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 362 Advanced Meat Product Evaluation Credit: 1 (0-4-0)
Course Description: Criteria and techniques for evaluation of meat products; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 361.
Registration Information: For Animal Science and Equine Science majors. A maximum of 5 credits is allowed for ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, and ANEQ 364. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496. Course may be taken twice for a maximum of 2 credits.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 363 Introduction to Wool and Fiber Evaluation Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 364 Advanced Wool and Fiber Evaluation Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 363.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 365 Principles of Teaching Therapeutic Riding Credits: 3 (2-2-0)
Course Description: Practical experiences and knowledge of the techniques to be a professional certified therapeutic riding instructor.
Prerequisite: ANEQ 351.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. For Animal Science and Equine Science majors. A maximum of 5 credits is allowed for ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 386A Equine Practicum: Equine Training and Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 386B Equine Practicum: Equine Reproductive Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 344.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
ANEQ 386C Equine Practicum: Equine Farrier Management  Credit: 1 (0-2-0)
Course Description: 
Prerequisite: ANEQ 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANEQ 420 Applied Nutrition--Computer Diet Formulation  Credits: 1 (0-2-0)
Course Description: Comparative diet formulation strategies for cattle (beef and dairy), equine, swine, and poultry. Utilizing advanced computer software to formulate diets, predict performance, and manage ingredient inventory.
Prerequisite: ANEQ 320 or ANEQ 345.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 440 Equine Industry and Issues  Credits: 3 (3-0-0)
Course Description: For students planning a career in the horse industry, management of facilities, production systems, personnel, marketing, and biological systems.
Prerequisite: ANEQ 344 and ANEQ 345 or ANEQ 334 and ANEQ 344 or ANEQ 345 and ANEQ 346 or ANEQ 334 and ANEQ 345 or ANEQ 346 and ANEQ 344 and ANEQ 346.
Registration Information: Any two of the following: ANEQ 334, ANEQ 344, ANEQ 345, ANEQ 346.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 441 Integrated Equine Science  Credits: 2 (2-0-0)
Course Description: Describe, understand and integrate the newest scientific principles in equine sciences with equine management.
Prerequisite: ANEQ 334 and ANEQ 345 and ANEQ 346 and ANEQ 344.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 442 Riding Instructor Training  Credits: 2 (0-4-0)
Course Description: Teaching techniques; theory; handling of large mounted groups, beginner through advanced levels.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 443 Applied Equine Nutrition  Credits: 2 (1-2-0)
Course Description: Applying principles of nutrition to feeding horses in different physiological states in an effort to promote their health and well-being.
Prerequisite: ANEQ 345.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 444 Equine Business Management  Credits: 2 (2-0-0)
Course Description: Real life* equine industry experience and the ins and outs of managing an equine facility/business.
Prerequisite: ANEQ 440.
Registration Information: Required field trips.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 445 Foaling Management  Credits: 2 (1-3-0)
Course Description: Management of the foaling mare and newborn foal; monitoring techniques, preventative and emergency care procedures.
Prerequisite: ANEQ 344.
Registration Information: ANEQ 344 or PVM sophomore standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 448 Livestock Manure Management and Environment  Credits: 3 (2-2-0)
Course Description: Manure management; maximizing benefits to soils and crops; minimizing air and water quality hazards; complying with regulations.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Registration Information: Credit allowed for only one of the following: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 450 Processed Meats  Credits: 3 (2-3-0)
Course Description: Must register for lecture and laboratory.
Prerequisite: ANEQ 360.
Term Offered: Fall.<Br>Prerequisite: ANEQ 360.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 460 Meat Safety  Credits: 2 (2-0-0)
Course Description: Meat safety; food borne pathogens; hazard analysis critical control points (HACCP) and total quality management (TQM) practices.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 470 Meat Processing Systems  Credits: 4 (3-2-0)
Course Description: Advanced understanding of the manufacturing, packaging, distribution, storage, and cooking of meat products.
Prerequisite: ANEQ 360.
Restriction: Must be a: Senior, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and lab.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
ANEQ 472 Sheep Systems Credits: 3 (2-2-0)
Course Description: Sheep production under farm and ranch conditions; products, breeds, breeding, nutrition, reproduction, and management systems.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 473 Dairy Systems Credits: 3 (2-3-0)
Course Description: Integration of nutrition, genetics, physiology, and economics for management decisions of dairy farm operations and production and marketing of milk.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310 and ANEQ 320).
Restriction: .
Registration Information: Senior standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 474 Swine Systems Credits: 3 (2-2-0)
Course Description: Production of purebred and commercial swine; breeds, breeding, feeding, marketing, and management.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 475 Travel Abroad-Animal Agriculture Credits: 2 (2-0-0)
Course Description: Onsite evaluation of international animal agriculture systems with emphasis on production, marketing, and management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 476 Feedlot Systems Credits: 3 (3-0-0)
Course Description: Feedlot facilities; nutrition; procurement; merchandising; handling; processing cattle; health care; custom feeding; managerial duties.
Prerequisite: ANEQ 320.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 478 Beef Systems Credits: 3 (2-2-0)
Course Description: Beef production as related to consumer through seedstock segments. Major emphasis on cow-calf management.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 486 Therapeutic Riding Instructor Practicum Credit: 1 (0-3-0)
Course Description: Mentor-guided teaching hours to students preparing for the PATH International Instructor examination.
Prerequisite: ANEQ 365.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

ANEQ 487A Internship: Animal Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 487B Internship: Equine Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ANEQ 496 Group Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U Sat/Unsat Only, Traditional.
Special Course Fee: No.

ANEQ 500 Recent Developments Credits: Var[1-6] (0-0-0)
Course Description: Recent developments in animal science, avian science, and food technology.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 510 Bovine Reproduction Management Credits: 4 (3-2-0)
Course Description: Role of reproduction in economic efficiency of cattle production systems. Causes of delayed breeding and nonpregnancy, abortion and perinatal mortality.
Prerequisite: ANEQ 310.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 522 Animal Metabolism Credits: 3 (3-0-0)
Course Description: Nutrient digestion, absorption, transport and metabolism in monogastric and ruminant domestic species as affected by physiological changes.
Prerequisite: CHEM 346 or CHEM 245 and CHEM 246.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 548 Issues in Manure Management Credits: 4 (2-2-1)
Course Description: Manure management practices maximizing benefits to soils and crops while minimizing hazards to air and water quality and complying with regulations.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Registration Information: Credit allowed for only one of the following courses: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 550A Basic Research Surgery: Farm Animal Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305.
Registration Information: Junior, senior, or graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 550B Basic Research Surgery: Rodent Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305.
Registration Information: Junior, senior, or graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 551 Field Necropsy Credits: 2 (1-2-0)
Course Description: Field necropsy techniques for collection of animal tissues for submission to a diagnostic laboratory.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (VS 313 or ANEQ 346 or MIP 315 or ANEQ 313).
Restriction: Must be a Graduate, Professional.
Registration Information: Junior or senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 555 Interpreting Animal Science Research Credits: 3 (3-0-0)
Course Description: Designing, conducting, analyzing, and reporting of animal science research.
Prerequisite: (ANEQ 101 or ANEQ 102) and (STAT 100 to 499 - at least 3 credits).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 567 HACCP Meat Safety Credits: 2 (2-0-0)
Course Description: Control of health problems in meat products through hazard analysis critical control point (HACCP) and total quality management (TQM) practices.
Prerequisite: ANEQ 460.
Registration Information: This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 565 Interpreting Animal Science Research Credits: 3 (3-0-0)
Course Description: Designing, conducting, analyzing, and reporting of animal science research.
Prerequisite: (ANEQ 101 or ANEQ 102) and (STAT 100 to 499 - at least 3 credits).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 567 HACCP Meat Safety Credits: 2 (2-0-0)
Course Description: Control of health problems in meat products through hazard analysis critical control point (HACCP) and total quality management (TQM) practices.
Prerequisite: ANEQ 460.
Registration Information: This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 575 Computational Biology in Animal Breeding Credits: 3 (2-2-0)
Course Description: Numerical analysis and use of computers to solve problems in animal improvement.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Graduate standing or written consent of instructor. Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 587 Internship Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ANEQ 610  Hormonal Regulation of Growth  Credits: 2 (2-0-0)
Course Description: Cellular and molecular regulation of animal growth by hormones and growth factors.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 621 Vitamin and Mineral Metabolism  Credits: 3 (3-0-0)
Course Description: Vitamin and mineral metabolism in domestic animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 625 Animal Nutrition, Emissions, and Management  Credits: 4 (3-3-0)
Course Description: Nutrients and nutrient function required to support animal life through all physiological states and assessment of the impacts on gaseous emissions from these animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Required field trips.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 631 Selection Index Theory  Credits: 3 (2-0-1)
Course Description: Quantitative methods for genetic evaluation: selection index theory and introduction to best linear unbiased prediction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 660 Topics in Meat Safety  Credit: 1 (1-0-0)
Course Description: Topics of current concern in meat safety.
Prerequisite: ANEQ 567.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 676 Molecular Approaches to Food Safety  Credits: 3 (1-4-0)
Course Description: Molecular subtyping, tracking, and control; molecular ecology and evolution of food-borne pathogens; molecular pathogenesis of food-borne diseases.
Prerequisite: MIP 300 or MIP 334.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 720 Nutritional Energetics  Credits: 3 (3-0-0)
Course Description: Dietary energy use to meet animal requirements for maintenance, growth, pregnancy, and lactation; environmental, nutritional, and physiological effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 725 Rumen Metabolism  Credits: 3 (3-0-0)
Course Description: Microbial degradation, transformation, and synthesis of ingested nutrients; feed particle passage kinetics in the rumen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 730 Advances in Cattle Breeding  Credits: 3 (3-0-0)
Course Description: Literature and research methods in beef cattle breeding.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 731 Advanced Genetic Prediction  Credits: 3 (3-0-0)
Course Description: Models and methods for prediction of genetic merit in livestock populations.
Prerequisite: ANEQ 575.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 784 Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ANEQ 792A Seminar: General Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792B Seminar: Breeding/Genetics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792C Seminar: Physiology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792D Seminar: Meat Sciences Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792E Seminar: Nutrition Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 792F Seminar: Livestock Management Systems Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Animal Science

Students majoring in Animal Science (food animals) are provided with an industry-oriented, science-based education that prepares them for careers in animal agriculture or one of many industries associated with livestock production. The curriculum focuses on the study of food-producing animals and includes foundation courses in the sciences. Students also choose from specialized courses to enhance their technical, practical, and business skills in topics related to various aspects of production, marketing, and processing of livestock and their products.

Learning Outcomes

Successful students will demonstrate:

- Broad-based understanding of biological principles and develop the ability to incorporate the use of these principles into animal management systems
- An understanding of business/economic principles and their application to food animal production systems
- Ability to critically evaluate industry and management issues
- Problem solving and leadership skills that enhance professional success

Potential Occupations

Potential occupations include: managers of production units such as ranches, feedlots, and dairy farms; sales representatives for feed companies, pharmaceutical firms, and livestock service organizations; employment with organizational groups/associations such as breed organizations, clientele groups, and branded beef companies; cooperative extension and other educational positions; or enrollment in graduate and professional schools.

Requirements

Effective Fall 2016

A maximum of five credits is allowed for the following:
ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364.
A maximum of 12 credits is allowed for any combination of the following:
ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364
ANEQ 384, ANEQ 487A, ANEQ 495, and ANEQ 496.

A minimum grade of 'C' (2.0) is required for each of the ANEQ courses which are required to complete the major.

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>ANEQ 101</td>
<td>Food Animal Science</td>
<td></td>
<td>4</td>
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<tr>
<td>ANEQ 105</td>
<td>Introduction to Large Animal Anatomy</td>
<td></td>
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<tr>
<td>AREC 202 or ECON 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td></td>
<td>Principles of Microeconomics (GT-SS1)</td>
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</tbody>
</table>

Select one group from the following:

- **Group A:**
  - CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
  - CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A

- **Group B:**
  - CHEM 111 General Chemistry I (GT-SC2) 3A
  - CHEM 112 General Chemistry Lab I (GT-SC1) 3A

- CO 150 College Composition (GT-CO2) 1A
- LIFE 102 Attributes of Living Systems (GT-SC1) 3A

Select at least three credits from the following:

- MATH 117 College Algebra in Context I (GT-MA1) 1B
- MATH 118 College Algebra in Context II (GT-MA1) 1B
- MATH 124 Logarithmic and Exponential Functions (GT-MA1) 1B
- MATH 125 Numerical Trigonometry (GT-MA1) 1B
- MATH 126 Analytic Trigonometry (GT-MA1) 1B
- MATH 141 Calculus in Management Sciences (GT-MA1) 1B
- MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B

| Arts and Humanities | 3B | 6 |
| Historical Perspectives | 3D | 3 |

**Total Credits** 32-33

**Sophomore**

Select one course from the following:

- ANEQ 230 Farm Animal Anatomy and Physiology
- ANEQ 305 Functional Large Animal Anatomy/Physiology
- BMS 300 Principles of Human Physiology
- ANEQ 250 Live Animal and Carcass Evaluation
- ANEQ 293 Animal Science Career Exploration Seminar
- ANEQ 310 Animal Reproduction 4B
- ANEQ 328 or SOCR 330 Foundations in Animal Genetics
  Principles of Genetics
- SPCM 200 Public Speaking
- RS 300 or SOCR 320 Rangeland Conservation and Stewardship
  Forage and Pasture Management

Select one course from the following:

- STAT 201 General Statistics
- STAT 301 Introduction to Statistical Methods
- STAT 307 Introduction to Biostatistics

| Advanced Writing | 2 | 3 |
| Business/Economic Electives | 6 | |

**Total Credits** 31-32
Junior

ANEQ 320 Principles of Animal Nutrition 4B 4
ANEQ 360 Principles of Meat Science 4B 3

Science Electives (Select 5-8 credits from a minimum of two courses below): 5-8
ANEQ 460 Meat Safety
ANEQ 522 Animal Metabolism
BC 351 Principles of Biochemistry
BC 401 Comprehensive Biochemistry I
BC 403 Comprehensive Biochemistry II
CHEM 245 Fundamentals of Organic Chemistry
CHEM 335 Introduction to Analytical Chemistry
CHEM 341 Modern Organic Chemistry I
CHEM 343 Modern Organic Chemistry II
CHEM 345 Organic Chemistry I
CHEM 346 Organic Chemistry II
LIFE 205 Microbial Biology
MIP 300 General Microbiology

Global and Cultural Awareness 3E 3

Applied Animal Science Elective (Select a minimum of 4 credits from a minimum of two courses – see list below) 4

Specialization Animal Science List (see list below) 2 6

Electives 0-4 25-29

Senior

Select one course from the following: 3-4
ANEQ 313/VS 313 Prevention and Control of Livestock Diseases
ANEQ 346 Equine Disease Management
MIP 315 Human and Animal Disease
ANEQ 330 Principles of Animal Breeding 4B 3

Select two courses from the following: 6-7
ANEQ 470 Meat Processing Systems 4A,4C
ANEQ 472 Sheep Systems 4A,4C
ANEQ 473 Dairy Systems 4A,4C
ANEQ 474 Swine Systems 4A,4C
ANEQ 476 Feedlot Systems 4A,4C
ANEQ 478 Beef Systems 4A,4C

Business/Economic Electives 1 3

Specialization Animal Science List (see list below) 2 6

Electives 3 0-11 21-34

Total Credits

Program Total Credits: 120

Specialization Animal Science List

<table>
<thead>
<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>ANEQ 334</td>
<td>Principles of Equine Genetics</td>
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<tr>
<td>ANEQ 345</td>
<td>Principles of Nutrition: Equine Applications</td>
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May select one advanced judging evaluation course:

ANEQ 355 Advanced Livestock Evaluation
ANEQ 357 Advanced Dairy Evaluation
ANEQ 362 Advanced Meat Product Evaluation
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<thead>
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<td>Advanced Wool and Fiber Evaluation</td>
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<td>ANEQ 420</td>
<td>Applied Nutrition--Computer Diet Formulation</td>
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<td>ANEQ 450</td>
<td>Processed Meats</td>
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<td>ANEQ 472</td>
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<td>ANEQ 473</td>
<td>Dairy Systems</td>
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<td>ANEQ 474</td>
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<td>Feedlot Systems</td>
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<td>ANEQ 478</td>
<td>Beef Systems</td>
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<td>ANEQ 487A</td>
<td>Internship: Animal</td>
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<td>Independent Study</td>
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<td>Group Study</td>
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<td>ANEQ 510</td>
<td>Bovine Reproduction Management</td>
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<td>ANEQ 522</td>
<td>Animal Metabolism</td>
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<td>ANEQ 551</td>
<td>Field Necropsy</td>
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<td>ANEQ 565</td>
<td>Interpreting Animal Science Research</td>
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<td>ANEQ 567</td>
<td>HACCP Meat Safety</td>
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<td>ANEQ 575</td>
<td>Computational Biology in Animal Breeding</td>
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<td>BC 463</td>
<td>Molecular Genetics</td>
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<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
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<td>Endocrinology</td>
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<td>BMS 450</td>
<td>Pharmacology</td>
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<td>Food Microbiology</td>
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<td>MIP 342</td>
<td>Immunology</td>
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<td>Microbial Ecology</td>
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<td>MIP 436</td>
<td>Industrial Microbiology</td>
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<td>MIP 443</td>
<td>Microbial Physiology</td>
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<td>MIP 450</td>
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<td>RS 400</td>
<td>Rangeland Improvements</td>
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<td>RS 471</td>
<td>Rangeland Planning and Grazing Management</td>
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<td>RS 472</td>
<td>Rangeland Ecosystem Planning</td>
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<td>VS 331</td>
<td>Histology</td>
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**Applied Animal Science List (Select a minimum of 4 credits from a minimum of 2 courses)**

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<th>Title</th>
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<tr>
<td>ANEQ 300A</td>
<td>Topics in Animal Sciences: Livestock Handling</td>
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<tr>
<td>ANEQ 300B</td>
<td>Topics in Animal Sciences: Livestock Entomology</td>
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<tr>
<td>ANEQ 300E</td>
<td>Topics in Animal Sciences: Family Ranching</td>
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<td>ANEQ 300L</td>
<td>Topics in Animal Sciences: Quality Assurance</td>
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<td>ANEQ 300N</td>
<td>Topics in Animal Sciences: Seedstock Merchandising</td>
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<tr>
<td>ANEQ 300R</td>
<td>Topics in Animal Sciences: Calving and Calf Care</td>
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<tr>
<td>ANEQ 300U</td>
<td>Topics in Animal Sciences: Seedstock Sale Management</td>
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<td>ANEQ 312</td>
<td>Animal Ultrasonography</td>
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<td>ANEQ 322</td>
<td>Pet Nutrition</td>
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<td>ANEQ 323</td>
<td>Zoo Nutrition</td>
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</table>
ANEQ 352  Introduction to Horse Evaluation  2
ANEQ 354  Introduction to Livestock Evaluation  3
ANEQ 356  Introduction to Dairy Evaluation  3
ANEQ 361  Introduction to Meat Product Evaluation  3
ANEQ 363  Introduction to Wool and Fiber Evaluation  1
ANEQ 384  Supervised College Teaching  1-5

Applied Equine Sciences Course (A maximum of one course, 1-3 credits, may be selected from the following courses):  1-3

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ANEQ 201A</td>
<td>Preparation of Horses for Competition: Western</td>
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<tr>
<td>ANEQ 201B</td>
<td>Preparation of Horses for Competition: English</td>
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<tr>
<td>ANEQ 202</td>
<td>Safety in Horse Handling</td>
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<tr>
<td>ANEQ 203</td>
<td>Equine Management</td>
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<td>ANEQ 204</td>
<td>Equine Facilities Management</td>
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<td>ANEQ 249</td>
<td>Introduction to the Trail Riding Industry</td>
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<td>ANEQ 315</td>
<td>Equine Behavior</td>
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<tr>
<td>ANEQ 325</td>
<td>Equine Exercise Physiology</td>
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<td>ANEQ 340</td>
<td>Horse Training and Sale Preparation I</td>
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<td>Horse Training and Sale Preparation II</td>
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<td>ANEQ 349</td>
<td>Packing and Outfitting</td>
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<td>ANEQ 351</td>
<td>Techniques in Therapeutic Riding</td>
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<td>ANEQ 353</td>
<td>Advanced Horse Evaluation</td>
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<td>ANEQ 358</td>
<td>Equine Event and Sales Management</td>
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<td>ANEQ 359</td>
<td>Equine Sales Production</td>
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<td>ANEQ 365</td>
<td>Principles of Teaching Therapeutic Riding</td>
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<td>ANEQ 386B</td>
<td>Equine Practicum: Equine Reproductive Management</td>
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<td>ANEQ 386C</td>
<td>Equine Practicum: Equine Farrier Management</td>
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<td>ANEQ 442</td>
<td>Riding Instructor Training</td>
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<td>ANEQ 445</td>
<td>Foaling Management</td>
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<td>ANEQ 486</td>
<td>Therapeutic Riding Instructor Practicum</td>
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</table>

L*** 2** 200-Level Foreign Language

1 Select credits from any AREC or ECON course or any business course, of which 3 credits may be a computer course. Access granted for the following business courses: ACT 205, BUS 205, FIN 305, MGT 305, MKT 305.

2 Select a total of 12 credits from the Specialization Animal Science List, or students may satisfy the requirement by completing a second major (Equine Science, Agricultural Business, Agricultural Education, or Journalism and Media Communication) or a minor (Food Science and Safety, Agricultural Business, or Business Administration).

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:** A maximum of five credits is allowed for ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364. A maximum of 12 credits is allowed for any combination of the following: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487A, ANEQ 495, and ANEQ 496.

A minimum grade of ‘C’ (2.000) is required for each of the ANEQ courses which are required to complete the major.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<td>ANEQ 101</td>
<td>Food Animal Science</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
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<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
<td>X</td>
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</table>
MATH 126 Analytic Trigonometry (GT-MA1) X 1B
MATH 141 Calculus in Management Sciences (GT-MA1) X 1B
MATH 155 Calculus for Biological Scientists I (GT-MA1) X 1B

Arts and Humanities X 3B 3
Historical Perspectives X 3D 3

<table>
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<tr>
<th>Semester 2</th>
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<td>Group A:</td>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2) X</td>
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<td>CHEM 108</td>
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<td>Group B:</td>
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<td>General Chemistry I (GT-SC2) X</td>
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<td>General Chemistry Lab I (GT-SC1) X</td>
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<td>CO 150</td>
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<td>AREC 202</td>
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<td>ECON 202</td>
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| Total Credits | 17-18 |

Sophomore

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<td>ANEQ 230</td>
<td>Farm Animal Anatomy and Physiology</td>
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<td>ANEQ 305</td>
<td>Functional Large Animal Anatomy/Physiology X</td>
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<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>ANEQ 250</td>
<td>Live Animal and Carcass Evaluation X</td>
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<td>STAT 301</td>
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<td>Introduction to Biostatistics X</td>
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<td>Advanced Writing X</td>
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| Total Credits | 15 |

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<td>ANEQ 293</td>
<td>Animal Science Career Exploration Seminar X</td>
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<td>ANEQ 310</td>
<td>Animal Reproduction X</td>
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<td>ANEQ 328</td>
<td>Foundations in Animal Genetics X</td>
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<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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<td>SOCR 320</td>
<td>Forage and Pasture Management X</td>
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<td>Public Speaking X</td>
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| Total Credits | 15-16 |

Junior

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<tr>
<td>ANEQ 320</td>
<td>Principles of Animal Nutrition</td>
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<td>ANEQ 360</td>
<td>Principles of Meat Science X</td>
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<tr>
<td>Global and Cultural Awareness X</td>
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| Total Credits | 16 |
### Science Elective (See List on Requirements tab)
- 2-4

### Electives
- 0-4

**Total Credits**
- 12-18

### Semester 6
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<tr>
<td>Applied Animal Science Electives (See List on Requirements tab)</td>
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**Total Credits**
- 13-14

### Senior

#### Semester 7

**Select one course from the following:**
- ANEQ 313/VS 313: Prevention and Control of Livestock Diseases — X
- ANEQ 346: Equine Disease Management — X
- MIP 315: Human and Animal Disease — X

**Select one course from the following:**
- ANEQ 470: Meat Processing Systems
- ANEQ 472: Sheep Systems — 4A,4C
- ANEQ 473: Dairy Systems — 4A,4C
- ANEQ 474: Swine Systems — 4A,4C
- ANEQ 476: Feedlot Systems — 4A,4C
- ANEQ 478: Beef Systems — 4A,4C

**Specialization Animal Science Electives (See List on Requirements tab)** — X

**Business Elective** — X

**Total Credits**
- 15-17

#### Semester 8

**Select one course not previously taken:**
- ANEQ 470: Meat Processing Systems — 4A,4C
- ANEQ 472: Sheep Systems — 4A,4C
- ANEQ 473: Dairy Systems — 4A,4C
- ANEQ 474: Swine Systems — 4A,4C
- ANEQ 476: Feedlot Systems — 4A,4C
- ANEQ 478: Beef Systems — 4A,4C

**Electives** — 0-11

**Total Credits**
- 6-18

**Program Total Credits:**
- 120

---

## Major in Equine Science

The Equine Science major prepares students to serve the many needs of a growing industry and focuses on providing students with an in-depth scientific knowledge of the varied functions of the horse and how to relate those scientific principles to the industry. Equine Science majors have the opportunity to develop a broad understanding of the horse as it relates to business, recreational, and production aspects of the industry. Currently, CSU has the most comprehensive equine program in the United States with major efforts in research, teaching, and public service.

### Potential Occupations
- The opportunity to attend professional and/or graduate school
- Positions that provide services to the horse industry
- Management of equine production systems such as breeding farms

### Learning Outcomes

Successful students will demonstrate:

- Broad-based understanding of biological principles and develop the ability to incorporate the use of these principles into the horse industry
- An understanding of business/economic principles and their application to equine enterprises
- Ability to critically evaluate equine industry issues
- Problem solving and leadership skills that enhance professional success
• Positions with horse organizations and horse shows
• Education positions with cooperative extension and colleges and universities

Requirements

Effective Fall 2016

A minimum grade of "C" (2.00) is required for each of the ANEQ courses which are required to complete the major.

A maximum of five credits is allowed for ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364. A maximum of twelve credits is allowed for any combination of the following: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487B, ANEQ 495, and ANEQ 496.

Freshman

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ANEQ 102</td>
<td>Introduction to Equine Science</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>ANEQ 105</td>
<td>Introduction to Large Animal Anatomy</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 292</td>
<td>Equine Industry Seminar</td>
<td></td>
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Select one group from the following:

Group A:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
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Group B:

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<thead>
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<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
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</tbody>
</table>

CO 150       | College Composition (GT-CO2)                      | 1A   | 3       |
LIFE 102     | Attributes of Living Systems (GT-SC1)             | 3A   | 4       |
SPCM 200     | Public Speaking                                   |      | 3       |

Select a minimum of 3 credits from the following: 3-4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1B</td>
<td></td>
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<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1B</td>
<td></td>
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<tr>
<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>MATH 126</td>
<td>Analytic Trigonometry (GT-MA1)</td>
<td>1B</td>
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</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>1B</td>
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Arts and Humanities 3B

Historical Perspectives 3D

Total Credits 30

Sophomore

Select one course from the following: 3-4

<table>
<thead>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANEQ 230</td>
<td>Farm Animal Anatomy and Physiology</td>
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<tr>
<td>ANEQ 305</td>
<td>Functional Large Animal Anatomy/Physiology</td>
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<td></td>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td></td>
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</table>

Select one course from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANEQ 328</td>
<td>Foundations in Animal Genetics</td>
<td></td>
<td></td>
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<tr>
<td>SOCR 330</td>
<td>Principles of Genetics</td>
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Select one course from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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Select one course from the following: 3

<table>
<thead>
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<th>Course Title</th>
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<tbody>
<tr>
<td>STAT 201</td>
<td>General Statistics</td>
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</tbody>
</table>
STAT 301 Introduction to Statistical Methods
STAT 307 Introduction to Biostatistics

Arts and Humanities 1
Business/Economics Electives
Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANEQ 334</td>
<td>Principles of Equine Genetics</td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 344</td>
<td>Principles of Equine Reproduction</td>
<td>4</td>
</tr>
<tr>
<td>ANEQ 345</td>
<td>Principles of Nutrition: Equine Applications</td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 346</td>
<td>Equine Disease Management</td>
<td>4</td>
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<tr>
<td>Advanced Writing</td>
<td>2</td>
<td></td>
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<tr>
<td>Advanced Science Course Electives (see list below)</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Applied Equine Science Electives (see list below)</td>
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<td></td>
</tr>
<tr>
<td>Experience Equine Science Electives</td>
<td>2-6</td>
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<tr>
<td>Business/Economics Elective</td>
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Electives

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>ANEQ 440</td>
<td>Equine Industry and Issues</td>
<td>3</td>
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</table>

Select one course from following:

- ANEQ 441 Integrated Equine Science
- ANEQ 444 Equine Business Management

Applied Equine Science Electives (see list below) 2

Business/Economics Elective
Global and Cultural Awareness

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANEQ 201A</td>
<td>Preparation of Horses for Competition: Western</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 201B</td>
<td>Preparation of Horses for Competition: English</td>
<td>2</td>
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<tr>
<td>ANEQ 202</td>
<td>Safety in Horse Handling</td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 203</td>
<td>Equine Management</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 204</td>
<td>Equine Facilities Management</td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 249</td>
<td>Introduction to the Trail Riding Industry</td>
<td>1</td>
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<tr>
<td>ANEQ 315</td>
<td>Equine Behavior</td>
<td>2</td>
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<tr>
<td>ANEQ 325</td>
<td>Equine Exercise Physiology</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 340</td>
<td>Horse Training and Sale Preparation I</td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 341</td>
<td>Horse Training and Sale Preparation II</td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 349</td>
<td>Packing and Outfitting</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 351</td>
<td>Techniques in Therapeutic Riding</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 352</td>
<td>Introduction to Horse Evaluation</td>
<td>2</td>
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<tr>
<td>ANEQ 353</td>
<td>Advanced Horse Evaluation</td>
<td>3</td>
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<tr>
<td>ANEQ 358</td>
<td>Equine Event and Sales Management</td>
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<tr>
<td>ANEQ 359</td>
<td>Equine Sales Production</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 365</td>
<td>Principles of Teaching Therapeutic Riding</td>
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</table>
**Major in Equine Science**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANEQ 384</td>
<td>Supervised College Teaching</td>
<td>Var.</td>
</tr>
<tr>
<td>ANEQ 386B</td>
<td>Equine Practicum: Equine Reproductive Management</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 386C</td>
<td>Equine Practicum: Equine Farrier Management</td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 442</td>
<td>Riding Instructor Training</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 445</td>
<td>Foaling Management</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 486</td>
<td>Therapeutic Riding Instructor Practicum</td>
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<tr>
<td>ANEQ 495</td>
<td>Independent Study</td>
<td>Var.</td>
</tr>
<tr>
<td>ANEQ 496</td>
<td>Group Study</td>
<td>Var.</td>
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</tbody>
</table>

**L*** 2** 200-Level Foreign Language Var.

**Food Animal Courses. Students may select a maximum of two courses:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANEQ 250</td>
<td>Live Animal and Carcass Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 286</td>
<td>Livestock Practicum</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 300A</td>
<td>Topics in Animal Sciences: Livestock Handling</td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 300B</td>
<td>Topics in Animal Sciences: Livestock Entomology</td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 300E</td>
<td>Topics in Animal Sciences: Family Ranching</td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 300L</td>
<td>Topics in Animal Sciences: Quality Assurance</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 300N</td>
<td>Topics in Animal Sciences: Seedstock Merchandising</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 300R</td>
<td>Topics in Animal Sciences: Calving and Calf Care</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 300T</td>
<td>Topics in Animal Sciences: Event, Fair, and Show Management</td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 300U</td>
<td>Topics in Animal Sciences: Seedstock Sale Management</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 300W</td>
<td>Topics in Animal Sciences: Equine Manure Management</td>
<td>1</td>
</tr>
<tr>
<td>ANEQ 310</td>
<td>Animal Reproduction</td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 312</td>
<td>Animal Ultrasonography</td>
<td>2</td>
</tr>
<tr>
<td>ANEQ 320</td>
<td>Principles of Animal Nutrition</td>
<td>4</td>
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<tr>
<td>ANEQ 330</td>
<td>Principles of Animal Breeding</td>
<td>3</td>
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</table>

**Advanced Science Course List**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
<td>4</td>
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<tr>
<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BC 403</td>
<td>Comprehensive Biochemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>BMS 430</td>
<td>Endocrinology</td>
<td>3</td>
</tr>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MIP 342</td>
<td>Immunology</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 335</td>
<td>Introduction to Analytical Chemistry</td>
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</tr>
<tr>
<td>ANEQ 522</td>
<td>Animal Metabolism</td>
<td>3</td>
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</tbody>
</table>

1 Select credits from any 200 level or above AREC or ECON course or any business course of which 3 credits may be a computer course. Access granted for the following business courses: ACT 205, BUS 205, FIN 305, MGT 305, MKT 305.

2 Select eight credits from four courses from the department approved applied course list for equine science majors.

3 Select one course from the department approved experience course list for equine science majors.

4 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:** A minimum grade of "C" (2.00) is required for each of the ANEQ courses which are required to complete the major.

A maximum of five credits is allowed for ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 356, ANEQ 361, ANEQ 362, ANEQ 363, and ANEQ 364.
A maximum of twelve credits is allowed for any combination of the following: ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487B, ANEQ 495, and ANEQ 496.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ANEQ 102 Introduction to Equine Science</td>
<td>X</td>
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<tr>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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</tbody>
</table>

Select a minimum of three credits from the following:

- MATH 117 College Algebra in Context I (GT-MA1) 1B
- MATH 118 College Algebra in Context II (GT-MA1) 1B
- MATH 124 Logarithmic and Exponential Functions (GT-MA1) 1B
- MATH 125 Numerical Trigonometry (GT-MA1) 1B
- MATH 126 Analytic Trigonometry (GT-MA1) 1B
- MATH 141 Calculus in Management Sciences (GT-MA1) 1B
- MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B

Historical Perspectives X 3D 3

Total Credits 14

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANEQ 105 Introduction to Large Animal Anatomy</td>
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</tr>
<tr>
<td>ANEQ 292 Equine Industry Seminar</td>
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</tr>
</tbody>
</table>

Select one group from the following:

**Group A:**
- CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
- CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A

**Group B:**
- CHEM 111 General Chemistry I (GT-SC2) 3A
- CHEM 112 General Chemistry Lab I (GT-SC1) 3A

CO 150 College Composition (GT-CO2) X 1A 3

SPCM 200 Public Speaking X 3

Arts and Humanities X 3B 3

Total Credits 16

**Sophomore**

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3-4</td>
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</table>
- ANEQ 230 Farm Animal Anatomy and Physiology
- ANEQ 305 Functional Large Animal Anatomy/Physiology X
- BMS 300 Principles of Human Physiology

Select one course from the following:

- AREC 202 Agricultural and Resource Economics (GT-SS1) 3C
- ECON 202 Principles of Microeconomics (GT-SS1) 3C

Select one course from the following:

- STAT 201 General Statistics
- STAT 301 Introduction to Statistical Methods
- STAT 307 Introduction to Biostatistics

Business Elective (See requirements tab) X 3

Elective X 3

Total Credits 15

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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</table>
- ANEQ 328 Foundations in Animal Genetics
- SOC 330 Principles of Genetics

Business Elective (See requirements tab) X 3

Total Credits 3
Arts and Humanities

Elective

Total Credits 12

Junior

Semester 5

<table>
<thead>
<tr>
<th>Credit Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANEQ 344 Principles of Equine Reproduction</td>
<td>X</td>
<td>4B</td>
<td></td>
<td>4</td>
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<tr>
<td>Applied Equine Science Electives</td>
<td>X</td>
<td></td>
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<td>4</td>
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<tr>
<td>Business Elective (See requirements tab)</td>
<td>X</td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Experience Equine Science Elective</td>
<td></td>
<td></td>
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<td>2</td>
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<tr>
<td>ANEQ 346 Equine Disease Management</td>
<td>X</td>
<td></td>
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STAT 301 or STAT 307 must be completed by the end of Semester 5.

Total Credits 17

Semester 6

<table>
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<th>Credit Course</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANEQ 334 Principles of Equine Genetics</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ANEQ 345 Principles of Nutrition: Equine Applications</td>
<td>X</td>
<td>4B</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Advanced Science Elective (See list on requirements tab)</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td>X</td>
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<td>3</td>
</tr>
<tr>
<td>Elective</td>
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<td></td>
<td></td>
<td>3</td>
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</table>

Total Credits 15

Senior

Semester 7

<table>
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<th>Recommended</th>
<th>AUCC</th>
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<tbody>
<tr>
<td>Global and Cultural Awareness</td>
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<td>ANEQ 440 Equine Industry and Issues</td>
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<td>Applied Equine Science Electives</td>
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<tr>
<td>Business Elective (See requirements tab)</td>
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ANEQ 346 must be completed by the end of Semester 7.

Total Credits 15

Semester 8

Select one course from the following:

<table>
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<tr>
<th>Credit Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<td>ANEQ 441 Integrated Equine Science</td>
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<td>ANEQ 444 Equine Business Management</td>
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<tr>
<td>Advanced Science Electives (See list on requirements tab)</td>
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<td>Electives</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 16

Program Total Credits: 120

Master of Science in Animal Sciences, Plan A

Requirements

Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>Lecture Courses 1,2</td>
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<td>ANEQ 792A Seminar: General</td>
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<tr>
<td>ANEQ 699 Thesis</td>
<td>Var.</td>
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Total Credits 30

A minimum of 30 credits are required to complete this program.

1. At least 12 credits must be at the 500-level or above.
2. Select courses with approval of advisor and graduate committee.
Department of Bioagricultural Sciences and Pest Management

Although there is no undergraduate major in bioagricultural sciences offered within the department, instructional programs in the Department of Bioagricultural Sciences and Pest Management serve a number of undergraduate majors and graduate programs across CSU.

Undergraduate Minor Programs

Minors are offered in Entomology and Plant Health. Students are provided with maximum breadth and depth with a limited number of required courses. The minors also serve to broaden the academic background of students seeking employment in the interdisciplinary job markets associated with most plant science majors. The minors provide adequate credits to meet most federal and state certification requirements for employment. Please contact Dr. Kondratieff for information on the entomology minor and Janet Dill for the plant health minor.

- Entomology
- Plant Health

Graduate

Graduate Programs in Bioagricultural Sciences

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Bioagricultural Sciences, with specializations available in Entomology, Pest Management, Plant Pathology, and Weed Science.

Research in the department is focused in four areas of emphasis that cut across disciplinary specializations:

1. genomics and molecular biology;
2. ecology and biodiversity;
3. biology and management of invasive species; and
4. integrated pest management.

In addition, a number of faculty in the department are members of CSU’s Graduate Degree Program in Ecology or the Cell and Molecular Biology Program and advise M.S. and Ph.D. students through these programs. Students interested in graduate work should refer to the Graduate and Professional Bulletin or visit the Department of Bioagricultural Sciences and Pest Management (http://bspm.agsci.colostate.edu).

Master Programs

- Master of Science in Bioagricultural Sciences
- Master of Science in Bioagricultural Sciences, Plan A, Entomology Specialization
- Master of Science in Bioagricultural Sciences, Plan B, Pest Management Specialization
- Master of Science in Bioagricultural Sciences, Plan A, Plant Pathology Specialization
- Master of Science in Bioagricultural Sciences, Plan A, Weed Science Specialization

Ph.D.

- Ph.D. in Bioagricultural Sciences
- Ph.D. in Bioagricultural Sciences, Entomology Specialization
- Ph.D. in Bioagricultural Sciences, Plant Pathology Specialization
- Ph.D. in Bioagricultural Sciences, Weed Science Specialization

Courses

Bioagricultural Sciences and Pest Management (BSPM)

BSPM 102 Insects, Science, and Society (GT-SC2) Credits: 3 (3-0-0)
Course Description: How insects develop, behave, and affect human activity. What every student should know about the most diverse life form on Earth.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BSPM 201 Weed Management and Control Credits: 3 (0-0-3)
Course Description: Basic overview of weeds and weed control.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BSPM 300  Topics in Livestock Entomology  Credit: 1 (1-0-0)
Also Offered As: ANEQ 300B.
Course Description: Identification, biology, and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both BSPM 300 and ANEQ 300B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 302  Applied and General Entomology  Credits: 2 (2-0-0)
Course Description: Biology and management of insects.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 303A  Entomology Laboratory: General  Credits: 2 (0-4-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 303B  Entomology Laboratory: Horticultural  Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 303C  Entomology Laboratory: Agricultural  Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 308  Ecology and Management of Weeds  Credits: 3 (2-3-0)
Course Description: Classification, characteristics; weed biology and ecology; control by cultural, mechanical, chemical, and biological means; successional management.
Prerequisite: (BZ 120 or LIFE 103) and (CHEM 107 or CHEM 111).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 310  Understanding Pesticides  Credits: 3 (3-0-0)
Course Description: Identification, properties, use, labeling, environmental interactions, and application of major classes of pesticides.
Prerequisite: BZ 100 to 199 - at least 3 credits or CHEM 100 to 199 - at least 3 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 350  Science Illustration  Credits: 2 (1-2-0)
Course Description: Fundamentals of science illustration, emphasizing observational and drawing skills.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 355A  Horticulture Pathology: General Pathology  Credit: 1 (1-0-0)
Course Description: A 5-week course consisting of General Plant Pathology; identification of the organisms that can cause plant diseases.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355A and BSPM 381A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B  Hort Pathology: Turf and Ornamental Disease  Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355C  Horticulture Pathology: Vegetable and Greenhouse Disease  Credit: 1 (1-0-0)
Course Description: Diseases in the Greenhouse and Vegetable crops, management and control.
Prerequisite: BSPM 355A.
Registration Information: Offered as an online course only. This is a partial semester course. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A  Horticultural Entomology Introduction  Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. Credit not allowed for both BSPM 356A and BSPM 102, or BSPM 302 or BSPM 303B. This is a partial-semester course. Offered online only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B  Horticultural Entomology: Food Crops  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: This is a partial-semester course. Offered online only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BSPM 356C Horticultural Entomology: Landscape Plants  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 361 Elements of Plant Pathology  Credit: 3 (2-2-0)
Course Description: Diseases of economic plants.
Prerequisite: BZ 104 or BZ 120 or HORT 100 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 365 Integrated Tree Health Management  Credit: 4 (3-3-0)
Course Description: Insects and diseases in forest and urban ecosystems. Effects, diagnosis, prevention, and interactions.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 384 Supervised College Teaching  Credit: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

BSPM 415 Pollinator Management in Agroecosystems  Credit: 1 (1-0-0)
Also Offered As: SOCR 415.
Course Description: Fundamental concepts of pollinator management, sustainable crop-pollinator interactions, global issues on pollinator conservation.
Prerequisite: HORT 100 or SOCR 100.
Registration Information: Credit not allowed for both BSPM 415 and SOCR 415. This is a partial-semester course. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 423 Evolution and Classification of Insects  Credit: 3 (1-4-0)
Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BSPM 423 and BSPM 523.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 424 Principles of Systematic Zoology  Credit: 3 (3-0-0)
Also Offered As: BZ 424.
Course Description: Principles and methods of classification, zoological nomenclature, taxonomic decisions regarding species and higher categories.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BSPM 424 and BZ 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 445 Aquatic Insects  Credit: 4 (2-4-0)
Course Description: Biology and recognition of major orders and families of aquatic insects; a collection is required.
Prerequisite: BZ 111 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 450 Molecular Plant-Microbe Interaction  Credit: 3 (3-0-0)
Course Description: Principles of plant-microbe/insect interactions, physiological and molecular aspects of plant defense, genomics approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).
Registration Information: Credit not allowed for both BSPM 450 and BSPM 550.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 451 Integrated Pest Management  Credit: 3 (3-0-0)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361. Also Offered As: BSPM 462, BZ 462, MIP 462.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 462 Parasitology and Vector Biology  Credit: 5 (3-4-0)
Also Offered As: BZ 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BSPM 462, BZ 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 487 Internship  Credit: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BSPM 492  Seminar  Credits: Var[1-3]  (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 495  Independent Study  Credits: Var[1-3]  (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 496  Group Study  Credits: Var[1-3]  (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 500  Foundations of Bioagricultural Sciences  Credits: 2  (2-0-0)
Course Description: Introduction to graduate school covering managing time, advisor and research, plus a survey of topics encompassed by the department of BSPM.
Prerequisite: None.
Restriction: Must be a: Graduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502A  Topics in Plant Pathology: Plant Viruses  Credit: 1  (1-0-0)
Course Description: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BZ 300 to 499 - at least 3 credits or LIFE 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502B  Topics in Plant Pathology: Plant Bacteriology  Credit: 1  (1-0-0)
Course Description: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BZ 300 to 499 - at least 3 credits or LIFE 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502F  Topics in Plant Pathology: Plant Disease Epidemiology  Credit: 1  (1-0-0)
Course Description: BSPM 361.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 505  Insect Behavior  Credits: 3  (3-0-0)
Course Description: Behavior of insects and related arthropods with special attention to social behavior.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 508  Environmental Fate of Pesticides  Credits: 3  (3-0-0)
Course Description: Processes that affect fate of pesticides and their metabolites in the environment with emphasis on soil and water.
Prerequisite: BZ 440 or CHEM 245 or SOCR 240.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 509  Herbicide Selectivity and Action  Credits: 3  (3-0-0)
Course Description: Selectivity of major photosynthetic and growth inhibitor herbicides based on herbicide transport, metabolism, and mode of action.
Prerequisite: BSPM 308 or BZ 440.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 510  Insect-Plant Disease Relationships  Credits: 3  (3-0-0)
Course Description: Relationships between insects and various plant pathogens as they affect survival and transmissions of pathogens.
Prerequisite: BSPM 302 or BSPM 361.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 520  Advanced Systematics  Credits: 3  (3-0-0)
Also Offered As: BZ 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BSPM 424 or BZ 424 or BZ 325.
Registration Information: Credit not allowed for both BSPM 520 and BZ 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 521  Forest Health Issues  Credits: 3  (3-0-0)
Course Description: Current topics related to forest and shade tree health from ecosystems to tree defense physiology.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 523  Advanced Evolution/Classification of Insects  Credits: 4  (1-4-1)
Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both BSPM 523 and BSPM 423.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 525  Insect Physiology  Credits: 3  (3-0-0)
Course Description: Principles of insect function.
Prerequisite: BSPM 302.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
BSPM 526  Evolutionary Ecology  Credits: 3 (3-0-0)
Also Offered As: BZ 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BSPM 526 and BZ 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 528  Invasive Plants/Weeds: Ecosystems to Molecules  Credits: 3 (3-0-0)
Course Description: Contributions of disciplines of weed science and invasion ecology to understanding the biology, ecology and management of "problem plants."
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (BZ 120) and (LIFE 102 or LIFE 103).
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 530  Scientific Writing  Credit: 1 (1-0-0)
Also Offered As: SOCR 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 530 and SOCR 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 540  Understanding Genomes  Credits: 3 (3-0-0)
Course Description: Harnessing genome information and related -omics level technologies for use in answering biological questions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 550  Molecular Plant-Microbe Interactions  Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe interactions, physiological and molecular aspects of plant defense, genomic approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).
Registration Information: Credit not allowed for both BSPM 550 and BSPM 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 551  Advanced Integrated Pest Management  Credits: 4 (3-0-1)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the practical application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 552  Biological Control of Plant Pests  Credits: 3 (3-0-0)
Course Description: Management of insect pests of plants and weeds using biological control agents such as insects, bacteria, viruses, and fungi.
Prerequisite: (BZ 120 or LIFE 103) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 555  Immature Insects  Credits: 3 (1-4-0)
Course Description: Characteristics of immature forms of orders and families of insects emphasizing those important to man.
Prerequisite: BSPM 303A or BSPM 303B or BSPM 303C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 556  Bioinformatics  Credits: 3 (3-0-0)
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both BSPM 556 and MIP 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BSPM 584 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 587 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 588 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 587 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Major questions and theory pertinent to understanding current and relevant science topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 594 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 596 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 598 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 599 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 710 Techniques in Molecular Biology and Genetics Credits: 3 (0-4-1)
Also Offered As: CM 710.
Course Description: Genetic manipulation of bacteria, bacteriophage, and yeast including experiments in molecular cloning and gene expression.
Prerequisite: BC 463 or BZ 346 or BZ 350 or MIP 450 or SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation.
Credit not allowed for both BSPM 710 and CM 710.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: SOCR 740.
Course Description: Advances in study of organization and function of nuclear and organellar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BSPM 740 and SOCR 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 792 Seminar Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 794 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Master of Science in Bioagricultural Sciences
Effective Fall 2007
The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Master of Science in Bioagricultural Sciences, Plan B, Pest Management Specialization
Requirements
Effective Fall 2009

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Requirements</strong></td>
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</tr>
<tr>
<td>BSPM 551</td>
<td>Advanced Integrated Pest Management</td>
<td>4</td>
</tr>
<tr>
<td>Select 9 credits from the following:</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>BSPM 502A</td>
<td>Topics in Plant Pathology: Plant Viruses or BSPM 502B</td>
<td></td>
</tr>
<tr>
<td>or BSPM 502F</td>
<td>Topics in Plant Pathology: Plant Disease Epidemiology</td>
<td></td>
</tr>
<tr>
<td>BSPM 507</td>
<td>Insect Behavior</td>
<td></td>
</tr>
<tr>
<td>BSPM 509</td>
<td>Herbicide Selectivity and Action</td>
<td></td>
</tr>
<tr>
<td>BSPM 510</td>
<td>Insect-Plant Disease Relationships</td>
<td></td>
</tr>
<tr>
<td>BSPM 521</td>
<td>Forest Health Issues</td>
<td></td>
</tr>
<tr>
<td>BSPM 523</td>
<td>Advanced Evolution/Classification of Insects</td>
<td></td>
</tr>
<tr>
<td>BSPM 528</td>
<td>Invasive Plants/Weeds: Ecosystems to Molecules</td>
<td></td>
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<tr>
<td>BSPM 550</td>
<td>Molecular Plant-Microbe Interactions</td>
<td></td>
</tr>
<tr>
<td>BSPM 556</td>
<td>Biological Control of Plant Pests</td>
<td></td>
</tr>
<tr>
<td>BSPM 792</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>BSPM 792</td>
<td>Seminar (present one seminar)</td>
<td>2</td>
</tr>
<tr>
<td>Degree-supporting non-departmental electives</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td><strong>Broad Education Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500-700 level course</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Additional Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSPM 698</td>
<td>Research</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td>34</td>
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</tbody>
</table>

A minimum of 34 credits are required to complete this program.

1. Choose from various courses such as teaching, internships, independent study, communication classes, second language, etc., with approval by advisor and committee.

2. Includes a scholarly paper on topic related to specialization and approved by the student’s graduate committee.

Master of Science in Bioagricultural Sciences, Plan A, Entomology Specialization
Effective Fall 2007
The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Master of Science in Bioagricultural Sciences, Plan A, Plant Pathology Specialization
Effective Fall 2007
The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Master of Science in Bioagricultural Sciences, Plan A, Weed Science Specialization
Effective Fall 2007
The M.S. degree requires 30-32 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Minor in Entomology
Requirements
Effective Spring 2004
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Lower Division</strong></td>
<td></td>
</tr>
<tr>
<td>Select one group from the following:</td>
<td></td>
<td>7-8</td>
</tr>
<tr>
<td>Group A:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td></td>
</tr>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td></td>
</tr>
<tr>
<td>Group B:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td></td>
</tr>
<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
<td></td>
</tr>
<tr>
<td><strong>Upper Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSPM 302</td>
<td>Applied and General Entomology</td>
<td>2</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BSPM 303A</td>
<td>Entomology Laboratory: General</td>
<td></td>
</tr>
<tr>
<td>BSPM 303B</td>
<td>Entomology Laboratory: Horticultural</td>
<td></td>
</tr>
<tr>
<td>BSPM 303C</td>
<td>Entomology Laboratory: Agricultural</td>
<td></td>
</tr>
</tbody>
</table>
**Minor in Plant Health**

**Requirements**

**Effective Spring 2012**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSPM 302</td>
<td>Applied and General Entomology</td>
<td>2</td>
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</table>

Select one from the following: 1-2

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSPM 303A</td>
<td>Entomology Laboratory: General</td>
<td></td>
</tr>
<tr>
<td>BSPM 303B</td>
<td>Entomology Laboratory: Horticultural</td>
<td></td>
</tr>
<tr>
<td>BSPM 303C</td>
<td>Entomology Laboratory: Agricultural</td>
<td></td>
</tr>
<tr>
<td>BSPM 308</td>
<td>Ecology and Management of Weeds</td>
<td>3</td>
</tr>
<tr>
<td>BSPM 310</td>
<td>Understanding Pesticides</td>
<td>3</td>
</tr>
<tr>
<td>BSPM 361</td>
<td>Elements of Plant Pathology</td>
<td>3</td>
</tr>
</tbody>
</table>

Select a minimum of 9-10 credits from the following (including the selections of BSPM 487 or BSPM 495 or BZ/LIFE courses below): 9-10

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSPM 365</td>
<td>Integrated Tree Health Management</td>
<td></td>
</tr>
<tr>
<td>BSPM 423</td>
<td>Evolution and Classification of Insects</td>
<td></td>
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<tr>
<td>BSPM 445</td>
<td>Aquatic Insects</td>
<td></td>
</tr>
<tr>
<td>BSPM 450</td>
<td>Molecular Plant-Microbe Interaction</td>
<td></td>
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<tr>
<td>BSPM 451</td>
<td>Integrated Pest Management</td>
<td></td>
</tr>
<tr>
<td>BSPM 462</td>
<td>Parasitology and Vector Biology</td>
<td></td>
</tr>
<tr>
<td>MIP 462</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 462</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSPM 487</td>
<td>Internship</td>
<td></td>
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</tbody>
</table>

or BSPM 495 Independent Study

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3</td>
</tr>
<tr>
<td>or LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td></td>
</tr>
<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants 1</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 21-23

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1 May be taken as electives by students in majors that are not in the biological or agricultural sciences.

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Ph.D. in Bioagricultural Sciences

**Effective Fall 2007**

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Ph.D. in Bioagricultural Sciences, Entomology Specialization

**Effective Fall 2007**

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Ph.D. in Bioagricultural Sciences, Plant Pathology Specialization

**Effective Fall 2007**

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Ph.D. in Bioagricultural Sciences, Weed Science Specialization

**Effective Fall 2007**

The Ph.D. degree requires 72 credits beyond the undergraduate degree. Course selection depends on each student’s focus within Bioagricultural Sciences and must be approved by the student’s graduate committee.

Department of Horticulture and Landscape Architecture

---

Departmental Main Office
Shepardson Building, Room 111
(970) 491-7019
cas_hla@mail.colostate.edu
hortla.agsci.colostate.edu (http://hortla.agsci.colostate.edu)

Professor Jessica Davis, Department Head
**Undergraduate Majors**

- Environmental Horticulture
- Landscape Business Concentration
- Landscape Design and Contracting Concentration
- Nursery and Landscape Management Concentration
- Turf Management Concentration
- Horticulture
- Floriculture Concentration
- Horticultural Business Management Concentration
- Horticultural Food Crops Concentration
  - Production Option
  - Seed Science Option
- Horticultural Science Concentration
- Horticultural Therapy Concentration
- Viticulture and Enology Concentration
- Landscape Architecture

**Minors**

A Horticulture or Environmental Horticulture minor will serve to broaden the academic background of students seeking employment in interdisciplinary job markets associated with plant sciences or the art and science of environmental horticulture. A minor will allow students a maximum breadth and depth in the field while utilizing a limited number of requirements.

- Environmental Horticulture
- Horticulture

**Graduate Programs in Horticulture**

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Horticulture (http://hortla.agsci.colostate.edu).

**Master Programs**

Master of Science in Horticulture, Plan A*
Master of Science in Horticulture, Plan B*
Master of Landscape Architecture, Plan C (M.L.A.)

**Ph.D.**

Ph.D. in Horticulture*

* Please see department for program of study.

**Courses**

Subjects in this department include: Horticulture and Landscape Architecture

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**Horticulture (HORT)**

**HORT 100 Horticultural Science** Credits: 4 (3-2-0)

**Course Description:** Principles of plant science and related disciplines as the base and context for the introduction of horticultural practices.

**Prerequisite:** None.

**Registration Information:** Must register for lecture and laboratory.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Traditional.

**Special Course Fee:** Yes.

**Additional Information:** Biological & Physical Sciences 3A.

**HORT 171 Environmental Issues in Agriculture (GT-SS3)** Credits: 3 (2-0-1)

**Also Offered As:** SOCR 171.

**Course Description:** Historical development of agriculture, environmental consequences of modern food production and other cultural approaches to agriculture.

**Prerequisite:** None.

**Registration Information:** Must register for lecture and recitation. Credit not allowed for both HORT 171 and SOCR 171.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**Additional Information:** Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

**HORT 221 Landscape Plants** Credits: 4 (2-4-0)

**Course Description:** Identification, landscape features, cultural requirements, and landscape use of coniferous and deciduous trees and shrubs, vines, and evergreens.

**Prerequisite:** None.

**Registration Information:** Must register for lecture and laboratory. Required field trips.

**Terms Offered:** Fall, Spring.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** Yes.

**HORT 231 Landscape Graphics Studio** Credits: 4 (2-4-0)

**Course Description:** Mechanical and freehand graphic techniques for landscape design. Use of pencil, ink, and colored markers. Plan, sectional, and perspective views.

**Prerequisite:** None.

**Registration Information:** Must register for lecture and laboratory.

**Term Offered:** Fall.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**HORT 232 Principles of Landscape Design** Credits: 4 (2-4-0)

**Course Description:** Basic concepts in the art and process of landscape design.

**Prerequisite:** HORT 231.

**Registration Information:** Must register for lecture and laboratory.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** Yes.
HORT 260 Plant Propagation  Credits: 4 (3-2-0)
Course Description: Theories, principles, and techniques of sexual and asexual propagation.
Prerequisite: BZ 120, may be taken concurrently or HORT 100, may be taken concurrently or LIFE 103, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 270 Fundamentals of Horticultural Therapy  Credits: 2 (2-0-0)
Course Description: Theory and practice of horticultural therapy in health care and human services; applications, settings, and professional career topics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 277 Introduction to Enology  Credit: 1 (1-0-0)
Course Description: Methods/criteria to evaluate, compare, and describe aroma and flavor characteristics in sound commercial wines; identification of common wine defects.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.

HORT 310 Greenhouse Management  Credits: 4 (3-2-0)
Course Description: Design and use of enclosed structures to manipulate controlled environments, effects on growth as applied to crops, production, and marketing costs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 321 Nursery Production and Management  Credits: 4 (3-2-0)
Course Description: Nursery industry organization, management, equipment, field and container production, storage, shipping, marketing, and business management practices.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.

HORT 322 Herbaceous Plants  Credits: 3 (2-2-0)
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 322A Herbaceous Plants  Credits: 3 (2-2-0)
Also Offered As: HORT 322B.
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
A) Face-to-face.
Prerequisite: HORT 100.
Registration Information: Credit not allowed for both HORT 322A and HORT 322B. Field trips required. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 322B Herbaceous Plants  Credits: 3 (2-0-1)
Also Offered As: HORT 322A.
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
B) Online.
Prerequisite: HORT 100.
Registration Information: Credit not allowed for both HORT 322A and HORT 322B. Field trips required. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 323 Landscape Design  Credits: 2 (1-2-0)
Course Description: Design and construction methods for landscape design as presented in simple problems.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 324 Landscape Design  Credits: 2 (1-2-0)
Course Description: Fundamentals of landscape design theory and plant composition as presented in simple problems.
Prerequisite: None.
Registration Information: For non-design majors only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 330 Computers for Landscape Design  Credits: 2 (1-2-0)
Course Description: Applications and techniques of computer software utilized in small-scale landscape design-build.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.

HORT 331 Landscape Design  Credits: 2 (2-0-0)
Course Description: Fundamentals of landscape design theory and plant composition as presented in simple problems.
Prerequisite: None.
Registration Information: For non-design majors only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 335 Landscape Structures  Credits: 4 (2-4-0)
Course Description: Design and construction methods for structures commonly used in residential landscaping. Preparation of construction documents.
Prerequisite: CON 131 and HORT 232.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.

HORT 336 Landscape Grading and Drainage Studio  Credits: 4 (2-4-0)
Course Description: Basic design principles for grading, drainage, and earth forms for small-scale projects.
Prerequisite: (HORT 221 and HORT 322 and HORT 335) and (MATH 118).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.
HORT 341 Turfgrass Management Credits: 3 (2-2-0)
Course Description: Principles and practices of turfgrass propagation and maintenance.
Prerequisite: HORT 100, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 344 Organic Greenhouse Production Credit: 1 (1-0-0)
Course Description: Fundamentals of greenhouse production using organic production methods.
Prerequisite: HORT 310.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 345 Diagnosis and Treatment in Organic Fields Credits: 2 (0-4-0)
Also Offered As: SOCR 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both HORT 345 and SOCR 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 347 Landscape Irrigation Credits: 3 (2-2-0)
Course Description: Practical design of sprinkler and trickle irrigation systems for commercial and residential landscapes.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 347, HORT 368, LAND 368.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 348 Landscape Irrigation and Water Conservation Credits: 3 (2-2-0)
Also Offered As: LAND 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: HORT 100 or LAND 110.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 347, HORT 368, LAND 368.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 349 Landscape Irrigation Credit: 1 (1-0-0)
Course Description: Necessary skills to design and manage irrigation systems used in the landscape industry.
Prerequisite: HORT 100, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 370 Turfgrass Management Credits: 3 (2-2-0)
Course Description: Principles and practices of turfgrass propagation and maintenance.
Prerequisite: HORT 100, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 377 Horticultural Methods for Therapy Programs Credit: 1 (1-0-0)
Course Description: Horticultural methods for health care and human service settings, including indoor and outdoor growing techniques, management and plant selection.
Prerequisite: HORT 100 or HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 382 Origins of Agriculture in the Andes of Peru Credits: 3 (0-0-3)
Course Description: Study abroad experience focused on understanding the agricultural, biological, cultural, and geographical diversity of the Andes region of Peru.
Prerequisite: HORT 100 or BZ 120 or LIFE 103.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Clinical skills in horticultural therapy; intervention, documentation, and reporting within therapy, social, and vocational HT programs.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 401 Medicinal and Value-Added Uses of Plants Credits: 3 (3-0-0)
Course Description: Chemical, biochemical and ethnobotanical perspective on the medicinal and value-added uses of plants.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 411 Horticultural Therapy Techniques Credits: 2 (2-0-0)
Course Description: Clinical skills in horticultural therapy; communication, safety, leadership, therapeutic relationships, adaptation of tools and activities.
Prerequisite: HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 412 Floriculture Crops Credits: 4 (3-0-1)
Course Description: Commercial production and marketing of bedding plants, potted container crops, and cut flowers.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 413 Medicinal and Value-Added Uses of Plants Credits: 3 (3-0-0)
Course Description: Chemical, biochemical and ethnobotanical perspective on the medicinal and value-added uses of plants.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HORT 424  Topics in Organic Agriculture  Credits: 3 (3-0-0)
Also Offered As: SOCR 424.
Course Description: Examination of issues specific to organic food
production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (SOCR 240 and AREC 328) and
(HORT 100 or SOCR 100) and (HORT 171 or SOCR 171).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 425  Horticultural Therapy Management  Credits: 3 (2-0-1)
Course Description: Horticultural therapy program and site design,
proposals, funding, marketing, management, and evaluation.
Prerequisite: HORT 423.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 431  Planting Design Studio  Credits: 4 (2-4-0)
Course Description: Site planning and design for landscape projects of a
limited scale. Problems of increasing complexity. Emphasis on real sites
and clients.
Prerequisite: HORT 487 and HORT 431.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 432  Intensive Landscape Design Studio  Credits: 5 (2-6-0)
Course Description: Site planning and design for landscape projects of a
limited scale. Problems of increasing complexity. Emphasis on real sites
and clients.
Prerequisite: HORT 487 and HORT 431.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 441  Turfgrass Science  Credits: 3 (3-0-0)
Course Description: Examination of turfgrass management practices
from a scientific perspective; discussion of advanced turfgrass
management technologies.
Prerequisite: BZ 120 or HORT 100 or SOCR 240.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 450A  Horticulture Food Crops: Cool Season Vegetable
Production  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 450B  Horticulture Food Crops: Warm Season Vegetable
Production  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 450C  Horticulture Food Crops: Small Fruit Production  Credit:
1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 450D  Horticulture Food Crops: Tree Fruit Production  Credit:
1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 452  Viticulture-Grape Production  Credit: 1 (1-0-0)
Course Description: Grape production in temperate zone climates.
Prerequisite: BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 454  Horticulture Crop Production and Management  Credits:
2 (2-0-0)
Course Description: Production and management of horticulture crops.
Prerequisite: HORT 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 460  Plant Breeding  Credits: 3 (2-0-1)
Also Offered As: SOCR 460.
Course Description: Theory and practice of plant breeding using
principles of genetics and related sciences.
Prerequisite: BZ 350, may be taken concurrently or LIFE 201A, may be
taken concurrently or SOCR 330, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit
not allowed for both HORT 460 and SOCR 460.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 461  Plant Breeding Laboratory  Credit: 1 (0-2-0)
Also Offered As: SOCR 461.
Course Description: Techniques and procedures used in public and
commercial plant breeding programs.
Prerequisite: HORT 460, may be taken concurrently or SOCR 460, may be
taken concurrently.
Registration Information: Credit not allowed for both HORT 461 and
SOCR 461.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
HORT 462  Viticulture Practices in Grape Production  Credits: 3 (3-0-0)
Course Description: Biology of grape vines and cultural practices including planning, training, pest control, pruning, and harvesting; special emphasis on Colorado.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 464A Arboriculture  Credits: 3 (2-2-0)
Also Offered As: HORT 464B.
Course Description: Practices used by arborists and landscape managers to plant, appraise and maintain landscape trees.
Prerequisite: HORT 100 and SOCR 240.
Registration Information: Credit not allowed for both HORT 464A and HORT 464B. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 464B Arboriculture  Credits: 3 (2-2-0)
Also Offered As: HORT 464A.
Course Description: Practices used by arborists and landscape managers to plant, appraise and maintain landscape trees.
Prerequisite: HORT 100 and SOCR 240.
Registration Information: Credit not allowed for both HORT 464A and HORT 464B. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 465 Landscape Estimating  Credits: 3 (2-2-0)
Course Description: Landscape construction estimating and bidding, contract documentation and other business practices relevant to landscape design-build and contracting.
Prerequisite: (MATH 117) and (MATH 118) and (MATH 124 or MATH 125 or MATH 141 or MATH 155) and (HORT 221).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 466 Urban and Community Forestry  Credits: 3 (3-0-0)
Also Offered As: F 466.
Course Description: Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite: F 310 or RS 310 or HORT 221.
Registration Information: Credit not allowed for both HORT 466 and F 466.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 476 Environmental Plant Stress Physiology  Credits: 3 (3-0-0)
Course Description: Plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite: BZ 440.
Registration Information: Credit not allowed for both HORT 476 and HORT 576.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 477 Enology-History and Winemaking Credits: 3 (3-0-0)
Course Description: History and development of the wine industry; mechanics of various processes and factors affecting wine quality and consumer acceptance.
Prerequisite: CHEM 107, may be taken concurrently and CHEM 108, may be taken concurrently or CHEM 111, may be taken concurrently and CHEM 112, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 479 Professional Landscape Practices  Credits: 2 (2-0-0)
Course Description: Business skills involved in a successful career in the green industry.
Prerequisite: HORT 100 and HORT 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 486A Practicum: Floriculture  Credits: 2 (0-4-0)
Course Description: Directed experience in applications of floriculture technique. Fall: pest, energy, and production. Spring: production and experimentation.
Prerequisite: HORT 310.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 486B Practicum: General  Credits: Var[1-6] (0-0-0)
Course Description: Directed experiences in applications of horticulture techniques and procedures.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 487 Internship  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 495 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 496 Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 511 Green Roof Culture  Credits: 2 (2-0-0)
Course Description: Understand the relevance of green roofs in North America, especially the process, from concept to project completion and maintenance.
Prerequisite: HORT 100 to 199 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HORT 515  Urban Horticulture  Credits: 3 (3-0-0)
Also Offered As: AGRI 515.
Course Description: Investigate and evaluate the techniques of incorporating food production systems in the urban and peri-urban environment.
Prerequisite: HORT 450A or HORT 450B or HORT 450C or HORT 450D.
Registration Information: Credit not allowed for both HORT 515 and AGRI 515. Offered only online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 571  Soil-Plant-Water Relations/Water Stress  Credits: 3 (3-0-0)
Course Description: Movement of water in the soil-plant-atmosphere continuum. Instrumentation for measuring plant-water relations. Plant responses to drought and salinity.
Prerequisite: BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 575  Plant Germplasm Conservation  Credits: 2 (2-0-0)
Course Description: Principles, concepts, and methodology for collection, conservation, and utilization of plant genetic resources.
Prerequisite: HORT 460 or SOCR 460.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 576  Advanced Environmental Plant Stress Physiology  Credits: 4 (3-0-1)
Course Description: Advanced aspects of plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 576 and HORT 476.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 588  Supervised Extension Practices  Credits: Var[1-18] (0-0-0)
Course Description: Field experiences in extension practices in horticulture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 601  Topics in Root and Rhizosphere Biology  Credits: 2 (1-0-1)
Course Description: In-depth overview of the biology of roots and the rhizosphere processes related to roots.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One course in plant physiology; one course in biochemistry. Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 675  Plant Stress Physiology  Credits: 3 (3-0-0)
Course Description: Research concepts based on physiological, biochemical, and molecular mechanisms controlling environmental stresses in plants.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 698  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 784  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 792  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Landscape Architecture (LAND)

LAND 110  Introduction to Landscape Architecture  Credits: 3 (1-2-1)
Course Description: Introductory theories, methods, and applications of landscape studies.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 120  History of the Designed Landscape  Credits: 3 (3-0-0)
Course Description: Major monuments and spaces from ancient Middle East through classical antiquity, the Renaissance, and Western tradition.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 200  Topics in Landscape Theory and Garden Design  Credits: 3 (3-0-0)
Course Description: Landscape theory and design principles in garden design. Students will be engaged through online discussions and will record weekly exercises and course material with the development of a sketchbook and blog/website postings.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 220  Fundamentals of Ecology (GT-SC2)  Credits: 3 (3-0-0)
Also Offered As: LIFE 220.
Course Description: Interrelationships among organisms and their environments.
Prerequisite: (BIO 100 to 199 - at least 3 credits or BZ 100 to 199 - at least 3 credits or LIFE 100 to 199 - at least 3 credits or HORT 100) and (MATH 100 to 199 - at least 3 credits).
Registration Information: Credit allowed for only one of the following: LAND 220/LIFE 220, or LIFE 320. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

LAND 230  Drawing the Landscape  Credits: 4 (2-4-0)
Course Description: Visual communication techniques; exploration of symbology, model building, design development drawing, and construction documentation draughting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 240  Fundamentals of Landscape Design Process  Credits: 4 (1-4-1)
Course Description: Initiation of formal exploration of design elements, materials, and principles, and introduction of design process as a defensible methodology.
Prerequisite: LAND 230.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 241  Environmental Analysis  Credits: 3 (1-4-0)
Course Description: Exploration and understanding of natural and cultural landscapes through analytical simulation techniques.
Prerequisite: LAND 230.
Registration Information: Must have concurrent registration in LAND 240.
Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 357  Omnibus Field Studies  Credits: 4 (0-8-0)
Course Description: Theories and methods for the analysis, design, and planning of garden and landscape scale environments.
Prerequisite: None.
Registration Information: 3 credits in landscape drawing and analysis.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 360  Basic Landscape Design and Construction  Credits: 3 (0-6-0)
Course Description: Site programming analysis, design, and construction, including skill development in specifying earthwork, drainage, and vegetative composition.
Prerequisite: LAND 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 361  Digital Methods  Credits: 3 (2-2-0)
Course Description: Landscape research, analysis, and design with ARCVIEW, AutoCAD, Microstation, and Photoshop.
Prerequisite: LAND 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 362  Form and Expression in Garden Design  Credits: 3 (0-6-0)
Course Description: Formal decision making for site scale environments, including creative processes for form-giving, and generation of experimental solutions.
Prerequisite: LAND 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 366  Digital Methods  Credits: 3 (2-2-0)
Course Description: Landscape research, analysis, and design with ARCVIEW, AutoCAD, Microstation, and Photoshop.
Prerequisite: LAND 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
LAND 363 Advanced Landscape Site Engineering Credits: 4 (2-4-0)
Course Description: Understanding and documenting the built environment with emphasis on construction and surveying as integral parts of design process.
Prerequisite: LAND 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 364 Design and Nature Credits: 4 (1-6-0)
Course Description: Computer-aided processes for siting, organizing, and evaluating cultural activities within ecologically fragile, landscape-scale environments.
Prerequisite: LAND 361.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 365 Landscape Contract Drawing and Specications Credits: 3 (2-2-0)
Course Description: Construction details, design development, and construction documentation emphasizing implementation of design projects.
Prerequisite: LAND 363.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 366 Landscape Design Expression Credits: 4 (0-8-0)
Course Description: Idea, values, and process landscape form applied to interactions of natural, cultural systems at the site and community scale; design competitions.
Prerequisite: LAND 365.
Registration Information: Credit not allowed for both LAND 366 and LAND 376.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 368 Landscape Irrigation and Water Conservation Credits: 3 (2-2-0)
Also Offered As: HORT 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: LAND 110 or HORT 100.
Registration Information: Credit not allowed for both LAND 368 and HORT 367 or HORT 368. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 376 Landscape Design and Visualization Credits: 4 (0-8-0)
Course Description: Precedents, ideas, values and processes of landscape form applied to landscape systems at the site and community scale; design competitions.
Prerequisite: LAND 362.
Registration Information: Credit not allowed for both LAND 376 and LAND 366. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 378 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 384 Seminar-Designed Landscapes-Theory and Criticism Credits: 2 (0-0-2)
Course Description: Readings, discussions, and writing in landscape architectural design theory; critical analysis of the designed and constructed landscape.
Prerequisite: LAND 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 444 Ecology of Landscapes Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for interpreting, describing, and representing natural and human modified landscapes.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 446 Urban Design Credits: 4 (0-8-0)
Course Description: Designing the urban landscape, including precedent exploration about overall image, materials, and structure of the city and its components.
Prerequisite: LAND 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 447 Comprehensive Landscape Design Credits: 4 (0-8-0)
Course Description: Terminal studio; research, analysis, and synthesis for comprehensive project identified by student and approved in advance by faculty committee.
Prerequisite: LAND 446.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 449 Professional Practice Credit: 1 (1-0-0)
Course Description: Theory and skills of landscape architectural professional practice including functional, human, business, legal, and political aspects.
Prerequisite: LAND 447, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 454 Landscape Field Studies Credits: 5 (1-6-1)
Course Description: Field observation of spatial and temporal landscape patterns resulting from natural and cultural processes and interactions.
Prerequisite: LAND 366.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Course Description</th>
<th>Special Course Fee</th>
<th>Grade Mode</th>
<th>Terms Offered</th>
<th>Registration Information</th>
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</thead>
<tbody>
<tr>
<td>LAND 455</td>
<td>Travel Abroad-European Landscape Architecture</td>
<td>5</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Spring</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 495A</td>
<td>Independent Study: Design Projects</td>
<td>Var[1-4]</td>
<td>None</td>
<td>Ideas, values, and processes of landscape form applied to interactions of natural and cultural systems for park and recreation applications.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must be a: Graduate, Professional</td>
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<tr>
<td>LAND 495B</td>
<td>Independent Study: Field Service</td>
<td>Var[1-4]</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must be a: Graduate, Professional</td>
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<tr>
<td>LAND 496</td>
<td>Group Study</td>
<td>Var[1-8]</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must be a: Graduate, Professional</td>
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<tr>
<td>LAND 510</td>
<td>Virtual Design Methods</td>
<td>3</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Spring</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 520</td>
<td>Geographic Information Systems</td>
<td>3</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Spring</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 560</td>
<td>Structure of Landscape Patterns</td>
<td>3</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Spring</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 610</td>
<td>Topics in Garden Design</td>
<td>4</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 620</td>
<td>Topics in Park Design</td>
<td>4</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 630</td>
<td>Topics in Urban Design</td>
<td>4</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 640</td>
<td>Major Landscape Change</td>
<td>4</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 650</td>
<td>Landscape Architecture Studio Option</td>
<td>4</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must register for lecture and laboratory</td>
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<tr>
<td>LAND 695A</td>
<td>Landscape Architectural Independent Study</td>
<td>Var[1-4]</td>
<td>None</td>
<td>Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.</td>
<td>No</td>
<td>Traditional</td>
<td>Fall</td>
<td>Must be a: Graduate, Professional</td>
</tr>
</tbody>
</table>

Colorado State University

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Major in Environmental Horticulture

Environmental horticulturists provide solutions necessary to achieve aesthetically pleasing, functional, and environmentally sound outdoor spaces. They also design and manage private and public landscapes, such as golf courses, botanical gardens, and parks. In addition, they may develop the entrepreneurial skills necessary to successfully operate a nursery, garden center, tree care, landscape design, and build or landscape management firm. Four concentrations are offered in the Environmental Horticulture major—Landscape Business, Landscape Design and Contracting, Nursery and Landscape Management, and Turf Management.

Learning Outcomes

Successful students will demonstrate:

- Management and leadership skills necessary for a successful career in the green industry
- Technical competencies in their understanding of growth and development of horticultural plants and landscapes, including development as influenced by manipulation of horticulture technologies, such as fertility and water management, and integrated pest management for all aspects of landscape horticulture
- Skills to assess site issues, provide creative environmentally sound solutions and manage designed, and built landscapes
- Analytical and problem solving skills that allow identification of problems related to the management or production of horticultural crops and landscapes, as well as strategies to solve them

Potential Occupations

Graduates of the Environmental Horticulture major will find career opportunities in a multitude of fields in the green industry. Emerging demand for environmental solutions and green technologies will position our students for careers in a wide variety of areas including: landscape design and construction, sports turf management, retail and wholesale nursery and garden center management; golf course superintendent, arborists, plant propagation, landscape project management, landscape maintenance, landscape estimating, green industry account management, irrigation design and water resource management, arboriculture, botanic gardens or arboreta, or landscape business management and entrepreneurship.

Concentrations

- Landscape Business Concentration
- Landscape Design and Contracting Concentration
- Nursery and Landscape Management Concentration
- Turf Management Concentration

Major in Environmental Horticulture, Landscape Business Concentration

The Landscape Business concentration prepares individuals for careers in business management, production, operations, account management, entrepreneurship, landscape management, and project management opportunities in the green industry. This concentration focuses on both horticulture and business. Students will develop skills in estimating project costs, plant selection and care, as well as business management techniques. Students completing this concentration will also earn a minor in Business Administration through the College of Business. This concentration is fully accredited by the Professional Landscape Network (PLANET). Additionally, students are required to complete an internship, furthering their learning opportunities.

Requirements

Effective Fall 2013

Freshman

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<td>Business Computing Concepts and Applications</td>
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Program Total Credits: 120
# Major Completion Map

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**Junior**

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### Major in Environmental Horticulture, Landscape Design and Contracting Concentration

The Landscape Design and Contracting concentration prepares students for careers in the design-build profession for residential, commercial, and public properties. Landscape designers and contractors create, build, and manage landscape projects and work in close collaboration with other design and contracting professionals. Students will develop skills to provide environmental solutions, creating projects that minimize the impact on the environment.

They also acquire skills to manage multifaceted projects of all scales, including site design, estimating of job and labor costs, construction methods and techniques, plant selection and care, as well as business management skills. Experiential learning opportunities lead to projects allowing our students to work with clients and realize built works prior to graduating. Additionally, students are required to complete an internship, furthering their learning opportunities. This concentration is fully accredited by the Professional Landscape Network (PLANET). Graduates of this concentration are recognized by the Colorado State Board of Landscape Architects, allowing our students to become eligible for landscape architecture licensure.

### Requirements

**Effective Fall 2015**

**Freshman**

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**Senior**

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<td>Entomology Laboratory: Horticultural</td>
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<td>HORT 341</td>
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Program Total Credits: 125-128

$^1$ One semester.

$^2$ Select from department list.
## Major Completion Map

### Freshman

**Semester 1**

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Select one course from the following:

- AGRI 192 Orientation to Agricultural Systems
- AGRI 292 Transfer Seminar

Select one course from the following:

- BUS 150 Business Computing Concepts and Applications
- CS 110 Personal Computing

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### Semester 2

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### Sophomore

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<td>CON 131 Graphic Communications for Construction</td>
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<td>HORT 221 Landscape Plants</td>
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HORT 221 must be completed by the end of Semester 4.

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### Junior

**Semester 5**

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Select one course from the following:

- AREC 202 Agricultural and Resource Economics (GT-SS1) | 3C |
- ECON 202 Principles of Microeconomics (GT-SS1) | 3C |
- HORT 322 Herbaceous Plants | X | 3 |
- HORT 335 Landscape Structures | X | 4 |
- HORT 465 Landscape Estimating | | | 3 |

Elective

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**Total Credits**

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### Semester 6

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<td>HORT 336 Landscape Grading and Drainage Studio</td>
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**Total Credits**

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This Major Completion Map outlines the courses and credits required for the Freshman, Sophomore, Junior, and Senior semesters at Colorado State University. Each semester includes critical, recommended, and AUCC credits, ensuring a structured academic path for students.
Major in Environmental Horticulture, Nursery and Landscape Management Concentration

Nursery and Landscape Management provides extensive training in landscape plant culture and use; and also develops skills needed to start and manage a nursery, garden center, arboriculture, or landscape management firm. Nursery specialists produce trees, shrubs, groundcovers, and herbaceous perennials for the landscape industry. Graduates become nursery and landscape managers who oversee and manage general landscape operations; choose the type and quantity of horticultural plants to be grown; select and purchase seed, fertilizers, and pest control chemicals; hire employees, direct and coordinate work activities; manage record-keeping, and implement marketing plans. Supporting courses are taught in plant and soil science, pest management, business management, horticulture and plant materials. An internship is required to ensure graduates have practical experience.

Effective Fall 2013

Freshman

AGRI 192 or 292  Orientation to Agricultural Systems  AUCC  1
Transfer Seminar
AREC 202  Agricultural and Resource Economics (GT-SS1)  3C  3
BUS 150 or CS 110  Business Computing Concepts and Applications  Personal Computing  3-4
BZ 120  Principles of Plant Biology (GT-SC1)  3A  4
CHEM 107  Fundamentals of Chemistry (GT-SC2)  3A  4
CHEM 108  Fundamentals of Chemistry Laboratory (GT-SC1)  3A  1
CO 150  College Composition (GT-CO2)  1A  3
HORT 100  Horticultural Science  3A  4
MATH 117  College Algebra in Context I (GT-MA1)  1B  1
MATH 118  College Algebra in Context II (GT-MA1)  1B  1
MATH 124  Logarithmic and Exponential Functions (GT-MA1)  1B  1
Electives

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<td>HORT 260 Plant Propagation</td>
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<td>SOCR 240 Introductory Soil Science</td>
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<td>SPCM 200 Public Speaking</td>
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<td>Global and Cultural Awareness</td>
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Junior

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<td>HORT 310 Greenhouse Management</td>
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<td>HORT 321 Nursery Production and Management</td>
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<td>HORT 322 Herbaceous Plants</td>
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<td>HORT 331 Landscape Design</td>
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Senior

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<td>HORT 370 Landscape Irrigation</td>
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Program Total Credits: 120

For internship requirement, refer to departmental policy.

**Major Completion Map**

**Freshman**

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Select one course from the following: 3-4
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**Sophomore**

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**Junior**

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**Senior**

**Semester 7**

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**Total Credits**

**Total Credits**

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Major in Environmental Horticulture, Turf Management Concentration

Turf Management trains students for management opportunities ranging from sod production to the establishment and maintenance of private and public grounds. Turfgrass managers are supervisors for golf courses, ski resorts, sports fields, and parks departments. Turfgrass professionals manage and train personnel, draw up work contracts, and allocate labor and financial resources efficiently. Graduates develop expertise in production and maintenance of ornamental and functional turfgrass areas with supplemental courses in nursery and landscape management, plant and soil science, business management, and irrigation design. An internship is required to ensure graduates have practical experience, furthering their learning opportunities.

Requirements

Effective Fall 2013

Freshman

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<td>HORT 487</td>
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<td>SOCR 240</td>
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<td>SPCM 200</td>
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<td>HORT 370</td>
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Program Total Credits: 120

1. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

### Freshman

#### Semester 1

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Global and Cultural Awareness: 3E 3

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Major in Horticulture

Horticulture is the application of scientific principles in the growing, marketing, processing, and utilizing of fruits, vegetables, flower and foliage plants, trees, shrubs, and turf grasses. The major requires a strong grounding in botany, chemistry, and horticulture. There are six concentrations in the horticulture major: Floriculture, Horticultural Business Management, Horticultural Food Crops, Horticultural Science, Horticultural Therapy, and Viticulture and Enology.

Learning Outcomes

Successful students will demonstrate:

• Technical competence that includes understanding plant growth and development as influenced by the manipulations of horticulture technologies such as greenhouse management, fertility management, integrated pest management, etc.
• Management and leadership skills that will allow them to become an entry-level supervisor in a specific business or research program.
• Problem solving skills such as identifying the significance of a problem, researching realistic solutions using current literature, and organizing the materials to develop appropriate recommendations and actions.

Potential Occupations

Horticulture is both a production and service industry. Well-educated horticulturists have the best opportunity for obtaining positions and moving up in the industry. The industry will be looking for professionals who can manage greenhouses, nurseries, and floral outlets, buy and sell supplies, plant material, and equipment, or edit journals and newsletters. Meeting the nutritional needs of the world population is an important challenge. Researchers are needed to develop improved fruit and vegetable varieties. Other professionals are needed to improve production and transportation methods and to develop and market better fertilizers. Within this field, students can exercise their talents and interests in computers, construction, engineering, chemistry, physics, social services, or business management. Participation in internships and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Some examples include: biotechnologist, extension specialist, floriculturist, fruit and vegetable grower, grape producer, greenhouse supplies/seed and plant material sales representative, greenhouse production manager, horticultural therapist, interior plant maintenance technician, marketing representative, plant breeder, produce buyer, winemaker.

Concentrations and Options

• Floriculture Concentration
• Horticultural Business Management Concentration
• Horticultural Food Crops Concentration
  • Production Option
  • Seed Science Option
• Horticultural Science Concentration
• Horticultural Therapy Concentration
• Viticulture and Enology Concentration

Major in Horticulture, Floriculture Concentration

Floriculture emphasizes greenhouse-grown flower crops. Students study propagation, production, utilization, and improvement of plants, and are prepared to grow quality greenhouse products. Courses include the production, use, and marketing of cut flowers, bedding, and potted plants, which give this concentration its focus. Students are also required to take a practicum and an internship in their junior and/or senior years. A number of opportunities exist in floriculture-related professions including greenhouse production, all phases of retail and wholesale floral business, greenhouse supply sales, greenhouse construction and computerized environmental control, plant breeding and plant research.

Requirements

Effective Fall 2013

Freshman

<table>
<thead>
<tr>
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<tr>
<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>HORT 100</td>
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<td>College Algebra in Context I (GT-MA1)</td>
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**Sophomore**

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<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>BUS 150 or CS 110</td>
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<td>BZ 223</td>
<td>Plant Identification</td>
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<td>HORT 260</td>
<td>Plant Propagation</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>Historical Perspectives</td>
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**Junior**

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<tr>
<td>BSPM 302</td>
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<td>BSPM 303B</td>
<td>Entomology Laboratory: Horticultural</td>
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<td>BSPM 361</td>
<td>Elements of Plant Pathology</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>HORT 310</td>
<td>Greenhouse Management</td>
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<td>Nursery Production and Management</td>
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<td>Landscape Design</td>
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<td>HORT 341</td>
<td>Turfgrass Management</td>
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<td>HORT 401</td>
<td>Medicinal and Value-Added Uses of Plants</td>
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<td>HORT 441</td>
<td>Turfgrass Science</td>
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<td>HORT 450A</td>
<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
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<td>Horticulture Food Crops: Small Fruit Production</td>
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<td>HORT 450D</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
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<td>HORT 452</td>
<td>Viticulture-Grape Production</td>
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<td>HORT 460/SOCR 460</td>
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<td>HORT 464A</td>
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<td>Environmental Plant Stress Physiology</td>
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<td>Herbaceous Plants</td>
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<td>Practicum: Floriculture</td>
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**Senior**

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<td>HORT 454</td>
<td>Horticulture Crop Production and Management</td>
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Major in Horticulture, Floriculture Concentration

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<td>SOCR 330</td>
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<td>Agricultural Economics</td>
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Program Total Credits: 120

1. HORT 571 may also be selected in this choice.
2. All junior-level floriculture majors are required to register for at least two credits of HORT 486A for one term.
3. For internship requirements, refer to departmental policy.
4. All senior-level floriculture majors are required to register for at least two credits of HORT 486A for one term.
5. Select from the list of courses taught in the Department of Agricultural and Resource Economics.
6. Select 3-4 credits not taken previously from the horticulture course selection in the junior year.
7. Select the number of credits to bring the program total to 120 credits.

### Major Completion Map

**Freshman**

**Semester 1**

<table>
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<tr>
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<td>BZ 120</td>
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**Semester 2**

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<td>CHEM 108</td>
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<td>CHEM 112</td>
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<td>Group C:</td>
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<td>HORT 100</td>
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<td>Global and Cultural Awareness</td>
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**Sophomore**

**Semester 3**

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<td>BZ 223</td>
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### Notes
- HORT 571 may also be selected in this choice.
- All junior-level floriculture majors are required to register for at least two credits of HORT 486A for one term.
- For internship requirements, refer to departmental policy.
- All senior-level floriculture majors are required to register for at least two credits of HORT 486A for one term.
- Select from the list of courses taught in the Department of Agricultural and Resource Economics.
- Select 3-4 credits not taken previously from the horticulture course selection in the junior year.
- Select the number of credits to bring the program total to 120 credits.
<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>SOCR 240 Introductory Soil Science</td>
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**Total Credits: 16**

**Semester 4**

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<td>CS 110 Personal Computing</td>
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<td>SPCM 200 Public Speaking</td>
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<td>Historical Perspectives</td>
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**Total Credits: 14**

**Junior**

**Semester 5**

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<td>BSPM 303B Entomology Laboratory: Horticultural</td>
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<td>HORT 310 Greenhouse Management</td>
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<td>HORT 322 Herbaceous Plants</td>
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**Total Credits: 15**

**Semester 6**

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<td>CHEM 245 Fundamentals of Organic Chemistry</td>
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<td>HORT 486A Practicum: Floriculture</td>
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<td>HORT 487 Internship</td>
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<td>Advanced Writing</td>
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**Total Credits: 15**

**Senior**

**Semester 7**

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<td>MGT 305 Fundamentals of Management</td>
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<td>SOCR 330 Principles of Genetics</td>
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**Total Credits: 15**

**Semester 8**

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<td>HORT 454 Horticulture Crop Production and Management</td>
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**Total Credits: 15**

Program Total Credits: **120**
Major in Horticulture, Horticultural Business Management Concentration

Horticultural Business Management provides the broadest horticultural background available. The curriculum consists of a core of business, computer, and economics courses. In horticulture, students choose a special emphasis, or take an array of courses that may lead to greater job opportunities. Graduates have the knowledge to manage a horticulture business or work in market-associated positions. Opportunities exist in the sale of facilities, plant material, equipment, and supplies involved in all aspects of horticulture, or as buyers of horticulture products in the U.S. or in international markets. With careful selection of business courses, horticulture graduates can complete a minor in business administration with one additional course.

**Requirements**

**Effective Fall 2016**

**Freshman**

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<tr>
<th>Course</th>
<th>Description</th>
<th>AUCC</th>
<th>Credits</th>
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<td>Orientation to Agricultural Systems</td>
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<td>Transfer Seminar</td>
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<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>CO 150</td>
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<td>ECON 204</td>
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**Sophomore**

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<td>Business Computing Concepts and Applications</td>
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<td>Fundamentals of Organic Chemistry</td>
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<td>HORT 260</td>
<td>Plant Propagation</td>
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<td>SOC 420</td>
<td>Introductory Soil Science</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>Advanced Writing</td>
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**Junior**

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<td>AREC 408 or FIN 305</td>
<td>Legal and Ethical Issues in Business</td>
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<td>BZ 140</td>
<td>Agricultural Finance</td>
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<td>BZ 140</td>
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<td>MGT 305</td>
<td>Plant Physiology</td>
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<td>MKT 305</td>
<td>Fundamentals of Management</td>
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<td>STAT 204</td>
<td>Fundamentals of Marketing</td>
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<td>BSPM, Upper Division</td>
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Senior

Select one from the following:  
HORT 310  Greenhouse Management  4B
HORT 460/SOCR 460  Plant Breeding  4B
HORT 454  Horticulture Crop Production and Management  4A,4C  2
HORT 476  Environmental Plant Stress Physiology  3
Horticulture, upper division¹  6
Arts and Humanities  3B  6
Global and Cultural Awareness  3E  3
Historical Perspectives  3D  3
Upper-Division Agricultural Economics, Business, or Economics²  3
Electives³  3-4

Total Credits  32

Program Total Credits:  120

¹ Select any upper-division (300- to 400-level) HORT course not required elsewhere in the program.
² Select any upper-division (300- to 400-level) course not required or selected elsewhere in the program from the following subject codes: ACT, AREC, BUS, CIS, FIN, MGT, MKT, REL; or ECON 335, ECON 340, ECON 346.
³ Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1  Critical  Recommended  AUCC  Credits
Select one course from the following:  
AGRI 192  Orientation to Agricultural Systems  1
AGRI 292  Transfer Seminar  3
AREC 202  Agricultural and Resource Economics (GT-SS1)  3C  3
BZ 120  Principles of Plant Biology (GT-SC1)  3A  4
MATH 117  College Algebra in Context I (GT-MA1)  X  1B  1
MATH 118  College Algebra in Context II (GT-MA1)  1B  1
MATH 124  Logarithmic and Exponential Functions (GT-MA1)  1B  1
Elective  6

Total Credits  14

Semester 2  Critical  Recommended  AUCC  Credits
CHEM 107  Fundamentals of Chemistry (GT-SC2)  X  3A  4
CHEM 108  Fundamentals of Chemistry Laboratory (GT-SC1)  3A  1
CO 150  College Composition (GT-CO2)  1A  3
ECON 204  Principles of Macroeconomics (GT-SS1)  3C  3
HORT 100  Horticultural Science  3A  4
CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.  X

Total Credits  15

Sophomore

Semester 3  Critical  Recommended  AUCC  Credits
ACT 205  Fundamentals of Accounting  3
Select one course from the following:  3-4
BUS 150  Business Computing Concepts and Applications
CS 110  Personal Computing
SOCR 240  Introductory Soil Science
Electives  4

Total Credits  6
Major in Horticulture, Horticultural Business Management Concentration

BZ 120 must be completed by the end of Semester 3.

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<thead>
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<td>HORT 260</td>
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Total Credits 16

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<td>Legal and Ethical Issues in Business</td>
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<td>BSPM Upper-Division</td>
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<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<td>STAT 204</td>
<td>Statistics for Business Students</td>
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<td>ACT 205 and ECON 204 must be completed by the end of Semester 5.</td>
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Total Credits 14

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<td>Plant Breeding</td>
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<td>Global and Cultural Awareness</td>
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<td>Agricultural Economics, Business or Economics Upper-Division</td>
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Total Credits 15

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<td>HORT 476</td>
<td>Environmental Plant Stress Physiology</td>
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<td>Arts and Humanities</td>
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<td>X</td>
<td>3B</td>
<td>3</td>
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<td>Historical Perspectives</td>
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<td>3D</td>
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<td>HORT Upper-Division</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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Total Credits 17

Program Total Credits: 120
Major in Horticulture, Horticultural Food Crops Concentration

Horticultural Food Crops focuses on systems related to production of fruits and vegetables. Specific courses include fruit and vegetable production, irrigation practices, soil fertility, propagation, breeding, and related plant pest management courses. Students must choose either the Production or Seed Science option. Those interested in organic food crop production can major in Horticulture in the Horticultural Food Crops concentration and pursue the Organic Agriculture Interdisciplinary Minor. A number of opportunities exist in horticultural food crops-related professions including greenhouse production, all phases of the retail and wholesale business, greenhouse supply sales, greenhouse construction, seed production and sales, plant breeding and plant research.

Options
- Production Option
- Seed Science Option

Major in Horticulture, Horticultural Food Crops Concentration, Production Option

Requirements

Effective Spring 2010

Freshman

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<th>Course</th>
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<tr>
<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems Transfer Seminar</td>
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<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>Select one group from the following:</td>
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<td>CHEM 107</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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Total Credits: 30

Sophomore

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<td>CHEM 245</td>
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<td>Plant Propagation</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>Historical Perspectives</td>
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Total Credits: 30
### Junior

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<td>Business Computing Concepts and Applications Personal Computing</td>
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<td>BSPM 302</td>
<td>Applied and General Entomology</td>
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<td>BSPM 303B</td>
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<td>BSPM 361</td>
<td>Elements of Plant Pathology</td>
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<td>BZ 440</td>
<td>Plant Physiology</td>
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<td>Greenhouse Management</td>
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<td>HORT 486B or 487</td>
<td>Practicum: General Internship</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
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**Option Electives**: 4-5

**Total Credits**: 29-31

### Senior

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<td>HORT 450A</td>
<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
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<td>HORT 450B</td>
<td>Horticulture Food Crops: Warm Season Vegetable Production</td>
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<td>HORT 450C</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
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<td>HORT 450D</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
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<td>HORT 454</td>
<td>Horticulture Crop Production and Management</td>
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**Total Credits**: 30

**Program Total Credits**: 120

¹ Select enough elective credits to bring the program total to minimum of 120 credits, of which at least 42 credits must be upper division (300- to 400-level).

### Major Completion Map

#### Freshman

**Semester 1**

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<tr>
<td>AGRI 192</td>
<td>Orientation to Agricultural Systems</td>
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<td>Transfer Seminar</td>
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**Total Credits**: 14

**Semester 2**

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Select one group from the following:

**Group A:**

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>Group B:</td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>X</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 113</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>HORT 100</td>
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**Total Credits**: 16

### Sophomore

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**Total Credits**: 14

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<td>Historical Perspectives</td>
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<td>Global and Cultural Awareness</td>
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**Total Credits**: 16

### Junior

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<td>HORT 487</td>
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**Total Credits**: 14

### Senior

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**Total Credits**: 3
### Major in Horticulture, Horticultural Food Crops Concentration, Seed Science Option

**Effective Fall 2011**

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
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Select one group from the following:

**Group A:**

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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**Group B:**

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<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>1B</td>
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<td>College Algebra in Context II (GT-MA1)</td>
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Total Credits: 15

Program Total Credits: 120
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**Sophomore**

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<tr>
<td>BZ 223</td>
<td>Plant Identification</td>
<td>3</td>
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<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td>4</td>
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<tr>
<td>HORT 260</td>
<td>Plant Propagation</td>
<td>4</td>
</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>3</td>
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<tr>
<td>STAT 201 or 301</td>
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<td></td>
<td>Introduction to Statistical Methods</td>
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<td>Arts and Humanities</td>
<td>3B</td>
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<td>Historical Perspectives</td>
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<td>Global and Cultural Awareness</td>
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| Total Credits | 30 |

**Junior**

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<tbody>
<tr>
<td>BUS 150 or CS 110</td>
<td>Business Computing Concepts and Applications</td>
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<tr>
<td>BSPM 302</td>
<td>Applied and General Entomology</td>
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<td>BSPM 303B</td>
<td>Entomology Laboratory: Horticultural</td>
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<td>BSPM 361</td>
<td>Elements of Plant Pathology</td>
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<td>BZ 440</td>
<td>Plant Physiology</td>
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<td>HORT 310</td>
<td>Greenhouse Management</td>
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<tr>
<td>HORT 321</td>
<td>Nursery Production and Management</td>
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<td>HORT 341</td>
<td>Turfgrass Management</td>
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<td>HORT 412</td>
<td>Floriculture Crops</td>
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<td>HORT 450C</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
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<td>HORT 450D</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
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<td>HORT 452</td>
<td>Viticulture-Grape Production</td>
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<td>Principles of Genetics</td>
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| Total Credits | 33 |

**Senior**

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<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
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<td>HORT 450B</td>
<td>Horticulture Food Crops: Warm Season Vegetable Production</td>
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<td>HORT 454</td>
<td>Horticulture Crop Production and Management</td>
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<td>HORT 460/SOCR 460</td>
<td>Plant Breeding</td>
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| Total Credits | 29-31 |

**Program Total Credits:**

| 120 |

---

1 At least 5 elective credits must be upper division (300-400-level). Select enough elective credits to bring program total to minimum of 120, of which at least 42 must be upper division.
## Major Completion Map

### Freshman

#### Semester 1

<table>
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<tr>
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<tr>
<td>AGRI 192</td>
<td>Orientation to Agricultural Systems</td>
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### Sophomore

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<td>SOCR 240</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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<td><strong>Arts and Humanities</strong></td>
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<td>Introduction to Statistical Methods</td>
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<td><strong>Arts and Humanities</strong></td>
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<td>Historical Perspectives</td>
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<td><strong>Global and Cultural Awareness</strong></td>
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### Junior

#### Semester 5

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<td>Internship</td>
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<td>Principles of Genetics</td>
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**Senior**

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<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
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<td>Horticulture Food Crops: Warm Season Vegetable Production</td>
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<td>HORT 460/ SOCR 460</td>
<td>Plant Breeding</td>
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<td>Environmental Plant Stress Physiology</td>
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<td>Advanced Writing</td>
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| | | | |
|----------|----------|-------------|------|---------|
| Program Total Credits: | | | | 120 |

**Major in Horticulture, Horticultural Science Concentration**

Horticultural Science graduates conduct research to discover new information about plant growth, development, and environmental response. This research can lead to new plant varieties and production methods. The curriculum consists of a solid foundation in the basic natural sciences as well as in agricultural sciences and prepares students for technical and scientific careers in laboratory, greenhouse, or field research. Exceptional students participate in individual research projects coordinated by professors. Graduates in this area often continue their education.

**Requirements**
## Effective Fall 2015

### Freshman

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<th>Course</th>
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<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems Transfer Seminar</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
<td>4</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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**Total Credits**: 31

### Sophomore

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<td>HORT 260</td>
<td>Plant Propagation</td>
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<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<td>PH 122</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>Global and Cultural Awareness</td>
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<td>Historical Perspectives</td>
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<td>Advanced Writing</td>
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**Total Credits**: 29-30

### Junior

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<tr>
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<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>Group B:</td>
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<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
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<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
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<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
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<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>Principles of Genetics</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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**Total Credits**: 30

### Senior

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<td>Applied and General Entomology</td>
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<tr>
<td>BSPM 303B</td>
<td>Entomology Laboratory: Horticultural</td>
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BSPM 361  Elements of Plant Pathology  3
Select one from the following:  3-4
   HORT 310  Greenhouse Management  4B
   HORT 460/SOCR 460  Plant Breeding  4B
   HORT 454  Horticulture Crop Production and Management  4A,4C  2
   HORT 476  Environmental Plant Stress Physiology  3
   HORT 495  Independent Study  2
Horticulture Electives  6
Electives  3-4

Total Credits  29-30
Program Total Credits:  120

---

1  The equivalent to MATH 117, MATH 118, and MATH 125, if needed, may be taken using elective credits.
2  Students must select at least 13 credits of upper division (300- to 400-level) horticulture elective and/or free elective courses to bring the program total of upper division credits to a minimum of 42. Select enough elective credits to bring the program total to 120 credits.

## Major Completion Map

### Freshman

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<td>Transfer Seminar</td>
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### Sophomore

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### Junior

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**Total Credits:** 15

### Semester 6

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<td>Introductory Soil Science</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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**Total Credits:** 15

### Senior

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**Total Credits:** 15

### Semester 8

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<td>Electives</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Total Credits:** 15

**Program Total Credits:** 120

---

**Major in Horticulture, Horticultural Therapy Concentration**

The Horticultural Therapy concentration combines horticulture courses with the study of therapy/human sciences, leading to careers in health care and human services. Horticultural therapy students gain the skills necessary to establish, manage, and work in a range of program types such as mental health, vocational, correctional, rehabilitative, wellness, educational, community-based and long term care.

**Requirements**
### Effective Fall 2015

#### Freshman

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<td>Therapy/Human Science courses (see list below)</td>
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| Elements of Plant Pathology | | |
| HORT 310             | 4B   | 4       |
| Greenhouse Management | | |
| HORT 421             |      | 2       |
| Horticultural Therapy Techniques | | |
| HORT 423             |      | 2       |
| Horticultural Therapy Programming | | |
| PSY 310              |      | 3       |
| Basic Counseling Skills | | |
| PSY 320              |      | 3       |
| Abnormal Psychology  | | |
| Horticulture Science courses (see list below) | | |
| Therapy/Human Science Courses (see list below) | | |
| Advanced Writing     | 2    | 3       |
| Electives            |      | 2       |
| Total Credits        |      | 31      |

#### Junior

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| OR
| BSPM 361             |      | 4       |
| Elements of Plant Pathology | | |
| HORT 421             |      | 2       |
| Horticultural Therapy Techniques | | |
| HORT 423             |      | 2       |
| Horticultural Therapy Programming | | |
| PSY 310              |      | 3       |
| Basic Counseling Skills | | |
| PSY 320              |      | 3       |
| Abnormal Psychology  | | |
| Horticulture Science courses (see list below) | | |
| Therapy/Human Science Courses (see list below) | | |
| Advanced Writing     | 2    | 3       |
| Electives            |      | 2       |
| Total Credits        |      | 31      |

#### Senior

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Major in Horticulture, Horticultural Therapy Concentration

HORT 454  Horticulture Crop Production and Management  4A,4C  2
HORT 487  Internship  3
SOWK 300 or STAT 311  Research in Applied Professions, Statistics for Behavioral Sciences I  3

Historical Perspectives  3D  3
Horticulture Science Courses (see list below)  5
Therapy/Human Science Courses (see list below)  6
Electives  3

Total Credits  29

Program Total Credits:  120

Horticultural Science Courses

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<td>Greenhouse Management</td>
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<td>HORT 321</td>
<td>Nursery Production and Management</td>
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<td>HORT 322</td>
<td>Herbaceous Plants</td>
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<td>HORT 331</td>
<td>Landscape Design</td>
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<td>HORT 344</td>
<td>Organic Greenhouse Production</td>
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<tr>
<td>HORT 401</td>
<td>Medicinal and Value-Added Uses of Plants</td>
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<td>HORT 412</td>
<td>Floriculture Crops</td>
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<td>HORT 450A</td>
<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
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<td>Horticulture Food Crops: Warm Season Vegetable Production</td>
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<td>HORT 450C</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
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<td>HORT 450D</td>
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Therapy/Human Science Courses

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<td>OT 215</td>
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<td>OT 355</td>
<td>The Disability Experience in Society</td>
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<td>PSY 315</td>
<td>Social Psychology</td>
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<td>PSY 316</td>
<td>Environmental Psychology</td>
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<tr>
<td>PSY 460</td>
<td>Child Exceptionality and Psychopathology</td>
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<td>SOC 352</td>
<td>Criminology</td>
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1 Offered as nontraditional or online course.

Major Completion Map

Freshman

Semester 1  Critical  Recommended  AUCC  Credits

Select one course from the following:

AGRI 192  Orientation to Agricultural Systems
AGRI 292  Transfer Seminar
BZ 120  Principles of Plant Biology (GT-SC1)  3A  4
CO 150  College Composition (GT-CO2)  1A  3
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**Semester 2**

- **CHEM 107** | Fundamentals of Chemistry (GT-SC2) | 3A | 4 |
- **PSY 100** | General Psychology (GT-SS3) | 3C | 3 |
- Select one course from the following: | | | 3 |
  - **HDFS 101** | Individual and Family Development (GT-SS3) | 3C |
  - **HDFS 175/PSY 175** | Developmental Psychology Across the Life Span |
- **Arts and Humanities** | | 3B | 3 |
- **Elective** | | | 3 |
- **CO 150 and AUCC 1B (MATH)** must be completed by the end of Semester 2. | X |
| Total Credits | | | 16 |

**Sophomore**

**Semester 3**

- **HORT 270** | Fundamentals of Horticultural Therapy | | 2 |
- **SPCM 200** | Public Speaking | | 3 |
- Horticultural Science Course (See List on Concentration Requirements Tab) | | 4 |
- Therapy/Human Science Course (See List on Concentration Requirements Tab) | | 3 |
- **Global and Cultural Awareness** | | 3E | 3 |
- **CHEM 107 and BZ 120** must be completed by the end of Semester 3. | X |
| Total Credits | | | 15 |

**Semester 4**

- **HORT 250** | Plant Propagation | | 4 |
- **SOCR 240** | Introductory Soil Science | | 4 |
- **Arts and Humanities** | | 3B | 3 |
- Therapy/Human Science Course (See List on Concentration Requirements Tab) | | 3 |
- **PSY 100** must be completed by the end of Semester 4. | X |
| Total Credits | | | 14 |

**Junior**

**Semester 5**

- **HORT 310** | Greenhouse Management | X | 4B | 4 |
- Select three credits from the following: | | | 3 |
  - **BSPM 302** | Applied and General Entomology |
  & **BSPM 303B** |
- **OR** | | | |
  - **BSPM 361** | Elements of Plant Pathology |
  - **PSY 320** | Abnormal Psychology | | 3 |
- Therapy/Human Science Course (See List on Concentration Requirements Tab) | | 3 |
- **Advanced Writing** | | 2 | 3 |
- **HORT 270** must be completed by the end of Semester 5. | X |
| Total Credits | | | 16 |

**Semester 6**

- **HORT 421** | Horticultural Therapy Techniques | | 2 |
- **HORT 423** | Horticultural Therapy Programming | X | 2 |
- **PSY 310** | Basic Counseling Skills | | 3 |
- Horticultural Science Course (See List on Concentration Requirements Tab) | | 3 |
| Total Credits | | | 16 |
Major in Horticulture, Viticulture and Enology Concentration

The Viticulture and Enology concentration is designed to give students a background in food crop production with a focus on grapes and their processing into wine. Students gain practical experience through required internships in grape production and winemaking. This is accomplished via one or more internships at a winery and/or vineyard. Students take background courses in science and pest identification and management as well as food safety and plant nutrition. Students completing the concentration have the opportunity to enter the industry as an assistant grower or winemaker.

Requirements

Effective Fall 2013

Freshman

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<tr>
<td>SOCR 330</td>
<td>Principles of Genetics</td>
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<td>SOCR 350</td>
<td>Soil Fertility Management</td>
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<td>Advanced Writing</td>
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**Senior**

<table>
<thead>
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<tr>
<td>BSPM 308</td>
<td>Ecology and Management of Weeds</td>
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<tr>
<td>HORT 310</td>
<td>Greenhouse Management</td>
<td>4B</td>
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<td>HORT 460/SOCR 460</td>
<td>Plant Breeding</td>
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<td>HORT 450C</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
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<td>HORT 450D</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
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<td>HORT 454</td>
<td>Horticulture Crop Production and Management</td>
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<td>HORT 462</td>
<td>Viticulture Practices in Grape Production</td>
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<td>HORT 476</td>
<td>Environmental Plant Stress Physiology</td>
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<td>HORT 477</td>
<td>Enology-History and Winemaking</td>
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<td>HORT 487</td>
<td>Internship</td>
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Program Total Credits: 120
## Major Completion Map

### Freshman

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<td>AGRI 192</td>
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<td>AGRI 292</td>
<td>Transfer Seminar</td>
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<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<td>CHEM 113</td>
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<td>CHEM 114</td>
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### Sophomore

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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>Plant Propagation</td>
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<td>LIFE 205</td>
<td>Microbial Biology</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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### Junior

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<td>BUS 150</td>
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<td>BSPM 361</td>
<td>Elements of Plant Pathology</td>
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<td>BZ 440</td>
<td>Plant Physiology</td>
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<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
<td>X</td>
<td>3</td>
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<td>Ecology and Management of Weeds</td>
<td>X</td>
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<td>HORT 310</td>
<td>Greenhouse Management</td>
<td>4B</td>
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<td>HORT 460/</td>
<td>Plant Breeding</td>
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<td>SOCR 460</td>
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<td>HORT 450C</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
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<td>HORT 450D</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
<td>X</td>
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<td>HORT 462</td>
<td>Viticulture Practices in Grape Production</td>
<td>X</td>
<td>4B</td>
<td>3</td>
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<td>HORT 477</td>
<td>Enology-History and Winemaking</td>
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<tr>
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<td>Horticulture Crop Production and Management</td>
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<td>4A,4C</td>
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<td>HORT 476</td>
<td>Environmental Plant Stress Physiology</td>
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<td>HORT 487</td>
<td>Internship</td>
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<td>SOCR 370</td>
<td>Irrigation Principles</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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| Program Total Credits: | 120 |

**Major in Landscape Architecture**

Studying Landscape Architecture at CSU is an adventure. Taking part in a challenging course of study, students prepare themselves for careers in a field whose enormous potential has only begun to be recognized. Landscape Architecture students study design as accomplished landscape architects see it: shaping spaces as well as planning and preserving them.

Landscape architects create and design detailed landscape plans to be functional, aesthetic, and compatible with the natural environment. Throughout the program, emphasis is on the relationship between design, nature, and society: The impact of environments on the individual as well as the impact of users on the environment. Registration laws for landscape architects in 49 states encourage graduation from programs such as that offered at CSU, which is accredited by the Landscape Architecture Accreditation Board of the American Society of Landscape Architects.

Landscape architects must analyze the natural elements of a site including the climate, soil, slope of the land, drainage, sunlight, and vegetation. Computer-aided design (CAD) has become an essential tool for landscape architects. Landscape architects often work with building architects, surveyors, engineers, and urban planners and collaborate with environmental scientists, foresters, and other professionals to find the best way to conserve or restore natural resources. Knowledge of appropriate local, state, or federal regulations such as those protecting wetlands or historic resources is essential.

Nature, culture, form, and space are the classic elements of landscape architecture with which students work in a series of design studies and related courses. Coursework focuses on a variety of landscape projects that grow more complex as the curriculum proceeds. The courses include subjects such as site design, landscape design and construction,
surveying, landscape ecology, and urban and regional planning. Other courses specific to the major are history of the designed landscape, plant and soil science, geology, and professional practice. Students are also encouraged to take advantage of summer travel courses available to study highly-valued ecological/cultural sites in Colorado and designed landscapes in Europe.

CSU offers the only nationally accredited undergraduate professional landscape architecture program in Colorado, via the Landscape Architectural Accreditation Board (http://www.asla.org/accreditationlaab.aspx) (LAAB).

**Learning Outcomes**

Successful students will demonstrate:

- Basic problem solving skills and knowledge for comprehensive landscape design that include the following characteristics:
  a. Research of natural systems, cultural systems, users, and precedents
  b. Analysis of related site systems and users
  c. Synthesis, the articulation of formal responses to research and analysis findings

- Technical competency in basic landscape architectural methods and communication, including organization of writing, project development, representation, and documentation

- Fundamental knowledge and skills appropriate to public and private entry-level landscape architecture including:
  a. Application of digital media
  b. Technology applications for analysis and design
  c. Landscape design
  d. Representation for analysis and design

**Potential Occupations**

Many types of organizations and individuals hire landscape architects – from real estate development firms starting new projects, municipalities constructing airports or parks, to home owners desiring garden designs. Many landscape architects are employed by government agencies doing site design for buildings, parks, and other public assets. Others are involved in park and recreation planning in national parks and forests, and restoration of environmentally damaged landscapes. Employment of landscape architects is expected to increase faster than the average for all occupations through the year 2015. Starting in 1998, average salaries for landscape architects exceeded average salaries of architects. Anticipated growth in construction is expected to increase demand for landscape architectural services over the long run. Participation in internships and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Some examples include: design consultant, landscape designer and contractor, private practice business, construction supervisor, land or environmental planner, urban designer, historic preservationist, golf course architect, resort planner.

**Requirements**

### Effective Fall 2010

#### Freshman

<table>
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<tr>
<th>Course Code</th>
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<tr>
<td>BZ 120</td>
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<tr>
<td>LAND 110</td>
<td>Introduction to Landscape Architecture</td>
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<td>LAND 120</td>
<td>History of the Designed Landscape</td>
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<td>LAND 230</td>
<td>Drawing the Landscape</td>
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<td>LAND 240</td>
<td>Fundamentals of Landscape Design Process</td>
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Total Credits: 30

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<td>GEO 120 or 122</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
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<td>Fundamentals of Ecology (GT-SC2)</td>
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<td>LAND 360</td>
<td>Basic Landscape Design and Construction</td>
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<td>LAND 361</td>
<td>Digital Methods</td>
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<td>LAND 362</td>
<td>Form and Expression in Garden Design</td>
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<td>LAND 363</td>
<td>Advanced Landscape Site Engineering</td>
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<td>Natural Resource Ecology and Measurements</td>
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<td>General Psychology (GT-SS3)</td>
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**Total Credits:** 35

### Junior

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<td>LAND 365</td>
<td>Landscape Contract Drawing and Specifications</td>
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<tr>
<td>LAND 444</td>
<td>Ecology of Landscapes</td>
<td>3</td>
</tr>
<tr>
<td>NR 319 or 323</td>
<td>Geospatial Applications in Natural Resources</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Remote Sensing and Image Interpretation</td>
<td></td>
</tr>
<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
<td>3</td>
</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
<td>4</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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**Total Credits:** 30-31

### Senior

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BZ 223 or HORT 221</td>
<td>Plant Identification</td>
<td>3-4</td>
</tr>
<tr>
<td>HORT 368/LAND 368</td>
<td>Landscape Irrigation and Water Conservation</td>
<td></td>
</tr>
<tr>
<td>LAND 392</td>
<td>Seminar-Designed Landscapes-Theory and Criticism</td>
<td>2</td>
</tr>
<tr>
<td>LAND 446</td>
<td>Urban Design</td>
<td>4</td>
</tr>
<tr>
<td>LAND 447</td>
<td>Comprehensive Landscape Design</td>
<td>4C</td>
</tr>
<tr>
<td>LAND 449</td>
<td>Professional Practice</td>
<td>4C</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Historical Perspectives</td>
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<tr>
<td>Electives</td>
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</table>

**Total Credits:** 30-31

**Program Total Credits:** 125-127

## Major Completion Map

### Freshman

**Semester 1**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
<td></td>
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<td>4</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>LAND 110</td>
<td>Introduction to Landscape Architecture</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>LAND 230</td>
<td>Drawing the Landscape</td>
<td>X</td>
<td></td>
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<tr>
<td>Mathematics</td>
<td></td>
<td>1B</td>
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**Total Credits:** 16

**Semester 2**

<table>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND 120</td>
<td>History of the Designed Landscape</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LAND 240</td>
<td>Fundamentals of Landscape Design Process</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>LAND 241</td>
<td>Environmental Analysis</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 126</td>
<td>Analytic Trigonometry (GT-MA1)</td>
<td>1B</td>
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<td></td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
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</table>

**Total Credits:** 16
CO 150, AUCC 1B (MATH), and BZ 120 must be completed by the end of Semester 2.

| Total Credits | 14 |

**Sophomore**  
**Semester 3**  
<table>
<thead>
<tr>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHEM 107</td>
<td></td>
<td></td>
<td>3A</td>
<td>4</td>
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<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>GEO 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
<td></td>
<td>3A</td>
<td></td>
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<tr>
<td>GEO 122</td>
<td>The Blue Planet: Geology of Our Environment (GT-SC2)</td>
<td></td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>GEO 121</td>
<td>Introductory Geology Laboratory (GT-SC1)</td>
<td></td>
<td>3A</td>
<td>1</td>
</tr>
<tr>
<td>LIFE 220/ LAND 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
<td></td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>LAND 360</td>
<td>Basic Landscape Design and Construction</td>
<td></td>
<td>4A</td>
<td>3</td>
</tr>
<tr>
<td>LAND 361</td>
<td>Digital Methods</td>
<td></td>
<td>X</td>
<td>3</td>
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</tbody>
</table>

| Total Credits | 17 |

**Semester 4**  
<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND 362</td>
<td>Form and Expression in Garden Design</td>
<td></td>
<td>4B</td>
<td>3</td>
</tr>
<tr>
<td>LAND 363</td>
<td>Advanced Landscape Site Engineering</td>
<td></td>
<td>X</td>
<td>4</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td></td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
<td>3E</td>
<td>3</td>
</tr>
</tbody>
</table>

| Total Credits | 13 |

**Semester 5**  
| Select one course from the following: | 5 |
| LAND 454 | Landscape Field Studies |
| LAND 455 | Travel Abroad-European Landscape Architecture |
| NR 220 | Natural Resource Ecology and Measurements |

| Total Credits | 5 |

**Junior**  
**Semester 6**  
| Select one course from the following: | 3 |
| AREC 202 | Agricultural and Resource Economics (GT-SS1) |
| ECON 202 | Principles of Microeconomics (GT-SS1) |
| LAND 364 | Design and Nature |
| LAND 365 | Landscape Contract Drawing and Specifications | X | 3 |
| Select one course from the following: | 3-4 |
| NR 319 | Geospatial Applications in Natural Resources |
| NR 323 | Remote Sensing and Image Interpretation |
| SPCM 200 | Public Speaking |
| LAND 220/ LIFE 220 | Landscape Plants |

| LAND 220/ LIFE 220 must be completed by the end of Semester 6. | X |

| Total Credits | 16-17 |

**Semester 7**  
<table>
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<tr>
<th>Course</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND 366</td>
<td>Landscape Design Expression</td>
<td></td>
<td>X</td>
<td>4</td>
</tr>
<tr>
<td>LAND 444</td>
<td>Ecology of Landscapes</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

| Total Credits | 14 |

**Senior**  
**Semester 8**  
| Select one course from the following: | 3-4 |
| BZ 223 | Plant Identification |
| HORT 221 | Landscape Plants |
| LAND 392 | Seminar-Designed Landscapes-Theory and Criticism | X | 2 |
Colorado State University

LAND 446  Urban Design  X  4
Advanced Writing  2  3
Electives  4

**Total Credits**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT 368/ LAND 368</td>
<td>Landscape Irrigation and Water Conservation</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LAND 447</td>
<td>Comprehensive Landscape Design</td>
<td>X</td>
<td>4C</td>
<td>4</td>
</tr>
<tr>
<td>LAND 449</td>
<td>Professional Practice</td>
<td>X</td>
<td>4C</td>
<td>1</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>X</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>X</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td><strong>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
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<td>14</td>
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</tbody>
</table>

**Program Total Credits:**

125-127

---

### Master of Landscape Architecture, Plan C (M.L.A.)

**Effective Fall 2009**

**First Year**

Select one from the following:

- LAND 630  Topics in Urban Design  4
- LAND 640  Major Landscape Change  3

Select one from the following:

- LAND 510  Virtual Design Methods  3
- LAND 520  Geographic Information Systems  3
- LAND 610  Topics in Garden Design  4

**Focus Area Electives (see list below)**  9

**Total Credits:**  20

**Second Year**

Select one from the following:

- LAND 630  Topics in Urban Design  4
- LAND 640  Major Landscape Change  3

Select one from the following:

- LAND 510  Virtual Design Methods  3
- LAND 520  Geographic Information Systems  3
- LAND 620  Topics in Park Design  4

**Focus Area Electives (see list below)**  9

**Total Credits:**  20

**Program Total Credits:**  40

A minimum of 40 credits are required to complete this program.

### Focus Area Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 515</td>
<td>Culture and Environment</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 530</td>
<td>Human-Environment Interactions</td>
<td>3</td>
</tr>
<tr>
<td>AREC 572</td>
<td>Social Benefit Cost Analysis</td>
<td>3</td>
</tr>
<tr>
<td>HIST 503</td>
<td>Historical Method: Preservation</td>
<td>3</td>
</tr>
<tr>
<td><strong>Landscape Ecology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 561</td>
<td>Landscape Ecology</td>
<td>3</td>
</tr>
<tr>
<td>ECOL 505</td>
<td>Foundations of Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ECOL 571</td>
<td>Advanced Topics in Ecology</td>
<td>1-3</td>
</tr>
<tr>
<td>ECOL 592</td>
<td>Interdisciplinary Seminar in Ecology</td>
<td>1-3</td>
</tr>
<tr>
<td>ECOL 610</td>
<td>Ecosystem Ecology</td>
<td>3</td>
</tr>
<tr>
<td>ECOL 620</td>
<td>Applications in Landscape Ecology</td>
<td>4</td>
</tr>
<tr>
<td>FW 465</td>
<td>Managing Human-Wildlife Conflicts</td>
<td>3</td>
</tr>
<tr>
<td>NR 522</td>
<td>Wilderness Ecosystem Planning</td>
<td>3</td>
</tr>
<tr>
<td>NR 578</td>
<td>Ecology of Disturbed Lands</td>
<td>3</td>
</tr>
<tr>
<td><strong>Landscape Restoration and Reclamation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 561</td>
<td>Landscape Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BZ 572</td>
<td>Phytoremediation</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 549</td>
<td>Drainage and Wetland Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ECOL 505</td>
<td>Foundations of Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ECOL 592</td>
<td>Interdisciplinary Seminar in Ecology</td>
<td>1-3</td>
</tr>
<tr>
<td>NR 515</td>
<td>Natural Resources Policy and Biodiversity</td>
<td>3</td>
</tr>
<tr>
<td>NR 561</td>
<td>Habitat Evaluation Procedures</td>
<td>2</td>
</tr>
<tr>
<td>NR 578</td>
<td>Ecology of Disturbed Lands</td>
<td>3</td>
</tr>
<tr>
<td><strong>Regional and Community Planning</strong></td>
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<td>AREC 547</td>
<td>Public Lands Planning and Management</td>
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<tr>
<td>ECON 540/ AREC 540</td>
<td>Environmental and Natural Resource Economics</td>
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<tr>
<td>ECON 541/ AREC 541</td>
<td>Environmental Economics</td>
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<tr>
<td>FW 465</td>
<td>Managing Human-Wildlife Conflicts</td>
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</tr>
<tr>
<td>NR 505</td>
<td>Concepts in GIS</td>
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<tr>
<td>NR 506</td>
<td>GIS Methods for Resource Management</td>
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<tr>
<td>NRRT 550</td>
<td>Ecotourism</td>
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<tr>
<td><strong>Remote Sensing/GIS</strong></td>
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<tr>
<td>NR 503</td>
<td>Remote Sensing and Image Analysis</td>
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<tr>
<td>NR 504</td>
<td>Computer Analysis of Remote Sensing Data</td>
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**Cultural and Historic Landscapes**

<table>
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<tbody>
<tr>
<td>ANTH 500</td>
<td>Development of Anthropological Theory</td>
<td>3</td>
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</table>

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[1] Focus Area Electives: A list of courses that students can select from to fulfill the requirements of their focus area. This list is subject to change and may include additional courses in future semesters. Students should consult the program's official document for the most up-to-date information.
Minor in Environmental Horticulture

Requirements
Effective Fall 2010

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
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<tr>
<td>NR 505</td>
<td>Concepts in GIS</td>
<td>4</td>
</tr>
<tr>
<td>NR 506</td>
<td>GIS Methods for Resource Management</td>
<td>4</td>
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<tr>
<td>NR 512</td>
<td>Spatial Statistical Modeling-Natural Resources</td>
<td>3</td>
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<tr>
<td>NR 621</td>
<td>Design of Geographic Information Systems</td>
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Semi-Arid/Western Landscapes

<table>
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<tr>
<td>AREC 542</td>
<td>Applied Advanced Water Resource Economics</td>
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<tr>
<td>CIVE 520</td>
<td>Physical Hydrology</td>
<td>3</td>
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<tr>
<td>CIVE 522</td>
<td>Engineering Hydrology</td>
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<tr>
<td>CIVE 524/WR 524</td>
<td>Modeling Watershed Hydrology</td>
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<tr>
<td>CIVE 544</td>
<td>Water Resources Planning and Management</td>
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</tr>
<tr>
<td>WR 516</td>
<td>Cumulative Effects and Watershed Analysis</td>
<td>3</td>
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</tbody>
</table>

Additional coursework may be required due to prerequisites.

1 A minimum of nine of the elective credits must be in regular graduate courses in the focus area.

Minor in Horticulture

Requirements
Effective Fall 2008

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
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<tr>
<td>HORT 100</td>
<td>Horticultural Science</td>
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<tr>
<td>HORT 260</td>
<td>Plant Propagation</td>
<td>4</td>
</tr>
<tr>
<td>HORT 221</td>
<td>Landscape Plants</td>
<td>4</td>
</tr>
<tr>
<td>HORT 260</td>
<td>Plant Propagation</td>
<td>4</td>
</tr>
<tr>
<td>HORT 221</td>
<td>Landscape Plants</td>
<td>4</td>
</tr>
<tr>
<td>HORT 341</td>
<td>Turfgrass Management</td>
<td>3</td>
</tr>
<tr>
<td>HORT 464A</td>
<td>Arboriculture</td>
<td>3</td>
</tr>
<tr>
<td>HORT 321</td>
<td>Nursery Production and Management</td>
<td>3</td>
</tr>
<tr>
<td>HORT 322</td>
<td>Herbaceous Plants</td>
<td>3</td>
</tr>
<tr>
<td>HORT 331</td>
<td>Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>HORT 441</td>
<td>Turfgrass Science</td>
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</tr>
<tr>
<td>LAND 120</td>
<td>History of the Designed Landscape</td>
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<tr>
<td>HORT 462</td>
<td>Viticulture Practices in Grape Production</td>
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</tr>
</tbody>
</table>

Total Credits 21

Department of Soil and Crop Sciences

Office in Plant Sciences Building, Room C127
(970) 491-6551
https://soilcrop.agsci.colostate.edu (http://soilcrop.colostate.edu)

Dr. Mark Brick, Acting Department Head

Undergraduate Majors

- Major in Soil and Crop Sciences
  - Agronomic Production Management Concentration
  - Applied Information Technology Concentration
  - Biomass for Biofuels Concentration (No new students are being admitted.)
  - International Soil and Crop Sciences Concentration
• Plant Biotechnology, Genetics, and Breeding Concentration
• Soil Ecology Concentration
• Soil, Land Uses, and Climate Change Concentration
• Soil Restoration and Conservation Concentration

Minors
• Minor in Soil Resources and Conservation
• Minor in Soil Science
• Organic Agriculture Interdisciplinary Minor

Graduate
Graduate Programs in Soil and Crop Sciences
Programs in crop science, soil science, or plant genetics lead to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Soil and Crop Sciences. (http://soilcrop.agsci.colostate.edu)

Master Programs
Master of Science in Soil and Crop Sciences, Plan A*
Master of Science in Soil and Crop Sciences, Plan B*

Ph.D.
Ph.D. in Soil and Crop Sciences*

* Please see department for program of study.

Courses
Soil and Crop Sciences (SOCR)

SOCR 100  General Crops  Credits: 4 (3-2-0)
Course Description: Production and adaptation of cultivated crops; principles affecting growth, development, management, and utilization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 171  Environmental Issues in Agriculture (GT-SS3)  Credits: 3 (2-0-1)
Also Offered As: HORT 171.
Course Description: Historical development of agriculture; environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 171 and HORT 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOCR 177  Applied Information Technology in Agriculture  Credit: 1 (1-0-0)
Course Description: Introduction to database and project management, GIS/GPS and remote sensing, as they apply to agriculture, the environment, and business management.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 192  Water in the West  Credits: 3 (0-0-3)
Course Description: History and current status of water resources management and policy in the western United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 200  Seed Anatomy and Identification  Credit: 1 (0-2-0)
Course Description: Principles of seed anatomy including reproduction, identification, and seed characteristics of plant families.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 201  Seed Development and Metabolism  Credit: 1 (0-2-0)
Course Description: Basic processes controlling seed development, maturation, dormancy, storage, germination, and how these factors relate to seedling growth.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 240  Introductory Soil Science  Credits: 4 (3-2-0)
Course Description: Formation, properties, and management of soils emphasizing soil conditions that affect plant growth.
Prerequisite: CHEM 107 or CHEM 111.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 300  Seed Purity Analysis  Credits: 2 (0-4-0)
Course Description: Fundamentals for determining physical purity of a seed lot using established rules and procedures.
Prerequisite: SOCR 200.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 301  Seed Germination and Viability  Credits: 2 (0-4-0)
Course Description: Seed viability tests including standard germination and tetrazolium, seed viability, dormancy, parameters of viability and evaluation.
Prerequisite: SOCR 201.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 310 Agronomic Plant and Seed Identification  Credits: 2 (0-4-0)
Course Description: Evaluate characteristics needed to identify agronomic plant and seed species.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 320 Forage and Pasture Management  Credits: 3 (3-0-0)
Course Description: Fundamentals of establishment, management, and utilization of cultivated forages including hay, silage, and pasture production.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 322 Principles of Microclimatology  Credits: 3 (3-0-0)
Course Description: Principles of microclimatology including energy balance concepts for soil and vegetation surfaces, and their application.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 330 Principles of Genetics  Credits: 3 (3-0-0)
Course Description: Transmission, population, and molecular genetics; practical applications.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 331 Genetics Laboratory  Credit: 1 (0-3-0)
Course Description: Experimental techniques in transmission and molecular genetics.
Prerequisite: SOCR 330, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 341 Microbiology for Sustainable Agriculture  Credit: 1 (1-0-0)
Course Description: Functional roles and management of soil organisms in organic agriculture, emphasis on ecological interactions with plants and plant pathogens.
Prerequisite: SOCR 240.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 342 Organic Soil Fertility  Credit: 1 (1-0-0)
Course Description: Organic soil fertility management in framework of holistic organic farming system.
Prerequisite: SOCR 240 and SOCR 341 and SOCR 350.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 343 Composting Principles and Practices  Credit: 1 (1-0-0)
Course Description: Fundamentals of compost production, use, and regulation.
Prerequisite: SOCR 240 and SOCR 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 344 Crop Development Techniques  Credits: 2 (2-0-0)
Course Description: Conventional and transgenic approaches to crop variety development.
Prerequisite: BZ 120 or LIFE 102 or LIFE 103.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 345 Diagnosis and Treatment in Organic Fields  Credits: 2 (0-4-0)
Also Offered As: HORT 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both SOCR 345 and HORT 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 350 Soil Fertility Management  Credits: 3 (3-0-0)
Course Description: Managing soil fertility and fertilizers to meet plant nutrient requirements in an environmentally sound manner with emphasis on nutrient cycling.
Prerequisite: (CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112) and (SOCR 240).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 351 Soil Fertility Laboratory  Credit: 1 (0-2-0)
Course Description: Soil chemical analyses and development of fertilizer recommendations for crops.
Prerequisite: SOCR 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 370 Irrigation Principles  Credits: 2 (2-0-0)
Course Description: Determination of irrigation water requirements based on the estimation of storage and movement of water in the soil-plant-atmospheric system.
Prerequisite: (HORT 100 or SOCR 100 or BZ 120) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
SOCR 371  Irrigation of Field Crops  Credit: 1 (1-0-0)
Course Description: Management of irrigation systems for field crops with emphasis on irrigation methods, irrigation scheduling and strategies for water conservation.
Prerequisite: SOCR 370.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 377  Geographic Information Systems in Agriculture  Credits: 3 (2-2-0)
Course Description: Introduction to geographic information systems and global positioning systems with applications to agriculture.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Credit not allowed for both SOCR 377 and SOCR 577. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

SOCR 384  Supervised College Teaching  Credits: Var1-5 (0-0-0)
Course Description: Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 400  Soils and Global Change: Science and Impacts  Credits: 3 (2-2-0)
Course Description: Foundations on the science of global change and its impact on soil processes and biota.
Prerequisite: (SOCR 240) and (LIFE 220 or LIFE 320).
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 404  Large Seeded Legume Seed Production  Credit: 1 (0-0-1)
Course Description: Principles for seed production of large-seeded legume crops with emphasis on common bean, peanut, and soybean.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 411  Seed Processes: Separation and Conditioning  Credit: 1 (0-0-1)
Course Description: Understanding the physical process required to separate pure seed from contaminants and maintain viability.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 412  Seed Processes: Storage and Deterioration  Credit: 1 (0-0-1)
Course Description: Environmental conditions and management factors influencing storage and deterioration of seeds, including physiological and biochemical changes.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 420  Crop and Soil Management Systems I  Credits: 3 (3-0-0)
Course Description: Principles of crop, soil management emphasizing environmental factors influencing crop growth and development, interactions with soil organic matter.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 421  Crop and Soil Management Systems II  Credits: 4 (3-2-0)
Course Description: Principles of crop and soil management with emphasis on soil erosion control, water conservation, and plant-water relationships.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 424  Topics in Organic Agriculture  Credits: 3 (3-0-0)
Also Offered As: HORT 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (AREC 328 and SOCR 240) and (HORT 100 or SOCR 100) and (SOCR 171 or HORT 171).
Registration Information: Credit not allowed for both SOCR 424 and HORT 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 430 Applications of Plant Biotechnology Credits: 3 (3-0-0)
Course Description: Current and potential applications of DNA-based biotechnology in crop agriculture and other plant disciplines.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 440 Pedology Credits: 4 (2-3-1)
Course Description: Process of soil formation, characterization, classification of soils; soil survey methods.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

SOCR 441 Soil Ecology Credits: 3 (2-3-0)
Course Description: An integrative, hands-on experience in the theory and application of ecology principles to the soil environment.
Prerequisite: SOCR 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 442 Forest and Range Soils Credits: 3 (3-0-0)
Course Description: Soil and water relationships in forest and rangeland ecosystems; significant properties in their management.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 455 Soil Microbiology Credits: 3 (3-0-0)
Course Description: Microbial activities in agricultural, forest, and grassland soils; in soil-plant relationships; and in maintenance of environmental quality.
Prerequisite: MIP 300 or SOCR 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 456 Soil Microbiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques used in study of ecology and activities of soil microorganisms.
Prerequisite: SOCR 455, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 460 Plant Breeding Credits: 3 (2-0-1)
Also Offered As: HORT 460.
Course Description: Theory and practice of plant breeding using principles of genetics and related sciences.
Prerequisite: BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 460 and HORT 460.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 461 Plant Breeding Laboratory Credit: 1 (0-2-0)
Also Offered As: HORT 461.
Course Description: Techniques and procedures used in public and commercial plant breeding programs.
Prerequisite: SOCR 460, may be taken concurrently or HORT 460, may be taken concurrently.
Registration Information: Credit not allowed for both SOCR 461 and HORT 461.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 467 Soil and Environmental Chemistry Credits: 3 (3-0-0)
Course Description: Fundamental principles of soil chemistry with respect to environmental reactions between soils and other natural materials and priority pollutants.
Prerequisite: CHEM 335.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 470 Soil Physics Credits: 3 (3-0-0)
Course Description: Physical properties of soils emphasizing mechanical composition, moisture, aeration, temperature, and structure related to management, plant growth.
Prerequisite: SOCR 240 or GEOL 232.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 471 Soil Physics Laboratory Credit: 1 (0-3-0)
Course Description: Familiarization of techniques and equipment used in evaluation of soil physical properties.
Prerequisite: SOCR 470, may be taken concurrently.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOCR 475 Global Challenges in Plant and Soil Science Credits: 3 (3-0-0)
Course Description: Evaluation of case studies to define problems and develop solutions to address global challenges in plant and soil science.
Prerequisite: (SOCR 240 or GEOL 122) and (LIFE 102 or BZ 120).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 478 Environmental Soil Sciences Credits: 3 (3-0-0)
Course Description: Chemical, biological, and physical aspects of prevention and remediation of soil and water pollution; environmental impact assessment.
Prerequisite: SOCR 470 and SOCR 467, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 479 Environmental Soil Science Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory and field studies of soil and groundwater contamination, including monitoring and remediation.
Prerequisite: SOCR 478, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 486 Practicum Credits: Var[1-4] (0-0-0)
Course Description: Directed experiences in the application of soil and crop science principles.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 487 Internship Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 488 Hydrus-1D Workshop Credit: 1 (0-0-1)
Course Description: Using Hydrus-1D software for flow and transport of water, heat, and chemicals in soil.
Prerequisite: SOCR 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 490 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 498 Undergraduate Research Credits: Var[1-6] (0-0-0)
Course Description: Research in soil and crop sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 500 Environmental Measurement Laboratory Credit: 1 (0-2-0)
Course Description: A hands-on instrumentation lab for making environmental, weather, and soil measurements using low-cost microcontroller boards and sensors.
Prerequisite: PH 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 514 Agricultural Experimental Design and Analysis Credits: 4 (3-3-0)
Also Offered As: STAT 514.
Course Description: Design and implementation of agricultural experiments and statistical analysis of resulting data.
Prerequisite: STAT 201 or STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: SOCR 414, SOCR 514, STAT 302, or STAT 514.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 522 Micrometeorology Credits: 3 (3-0-0)
Course Description: Microenvironments; physics of environmental variables; plant canopy microclimate; evapotranspiration; surface-atmosphere exchange; instrumentation.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 530 Scientific Writing Credit: 1 (1-0-0)
Also Offered As: BSPM 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both SOCR 530 and BSPM 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 535 Origin and Evolution of Cultivated Plants Credits: 3 (3-0-0)
Course Description: Origin of crops from viewpoints of archaeology, history, botany, and taxonomy, and continued evolution of plants under cultivation.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 540 Soil-Plant-Nutrient Relationships Credits: 3 (3-0-0)
Course Description: Soil and plant factors affecting nutrient uptake, mechanistic models of uptake, availability and functions of essential elements, diagnostic techniques.
Prerequisite: SOCR 350.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 550 Advanced Soil Genesis Credits: 3 (3-0-0)
Course Description: Modern concepts of specific mechanisms involved in formation of genetic soil groups and their relationship to environmental factors.
Prerequisite: SOCR 440.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
SOCR 570 Plant Breeding for Drought Tolerance Credit: 1 (1-0-0)
Course Description: Principles and practices of evaluation, selection and cultivar development for crops in drought-stress environments with an emphasis on agronomic crops.
Prerequisite: SOCR 330 and SOCR 460.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 571 Foundations of Soil Science Credits: 2 (2-0-0)
Course Description: Importance of soils in ecology and earth system science with regard to the study and management of the soil resource.
Prerequisite: SOCR 240.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 577 Principles/Components: Precision Agriculture Credits: 3 (2-2-0)
Course Description: Principles and components of precision agriculture, including GPS, GIS, remote sensing, and their applications in soil and crop management.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SOCR 577 and SOCR 377. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 600 Advanced Plant Breeding Credits: 4 (3-0-1)
Course Description: Developmental, physiological, and biochemical determinants of crop yields as controlled by genetic and environmental effects.
Prerequisite: BZ 440.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 650 Research Proposal Development Credit: 1 (1-0-0)
Course Description: Skills to develop and write an effective scientific research proposal.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 670 Terrestrial Ecosystems Isotope Ecology Credits: 3 (2-2-0)
Course Description: Isotope distribution in biogeochemical cycles, research topics in biosphere-atmosphere interactions; lab experience with isotope techniques.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 675 Presentations for Scientific Audiences Credit: 1 (1-0-0)
Course Description: Organization and presentation of scientific information to audiences in oral and poster format.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: Organization and presentation of scientific information to audiences in oral and poster format.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 720 Advanced Plant Breeding Methods Credits: 2 (2-0-0)
Course Description: Historical perspectives in plant breeding, plant reproduction, genetic gain, breeding and selection systems in self- and cross-pollinated plants.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 499 - at least 3 credits).
Restriction: Must be a Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 720B  Advanced Plant Breeding: Tools  Credits: 2 (2-0-0)
Course Description: Plant breeding strategies, genotype x environment interaction, field plot and genomic tools, breeding for pest resistance, stress tolerance, quality.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 725  Quantitative Inheritance in Plant Breeding  Credits: 3 (2-2-0)
Course Description: Quantitative genetic structure of populations, recognition of genetic, environmental variance. Methods of dealing with quantitatively inherited traits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 730  Topics in Plant Breeding and Genetics  Credit: 1 (1-0-0)
Course Description: Current literature regarding mechanisms used for plant improvement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 731  Plant Breeding Data Management  Credit: 1 (1-0-0)
Course Description: Principles and best practices for optimal data management for plant breeding and other data-intensive research programs.
Prerequisite: None.
Registration Information: Must have taken three credits in computer science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 740  Plant Molecular Genetics  Credits: 3 (3-0-0)
Also Offered As: BSPM 740.
Course Description: Advances in study of organization and function of nuclear and organelar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOCR 740 and BSPM 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 755  Advanced Soil Microbiology  Credits: 3 (3-0-0)
Course Description: Ecology of soil microorganisms emphasizing population and activity relationships, nitrogen fixation, and microbe-pesticide interactions.
Prerequisite: MIP 624 or SOCR 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 760  Advanced Soil Chemistry  Credits: 3 (3-0-0)
Course Description: Surface chemistry of soils, electrical double layer models of surface charge and potential, colloid stability, computer modeling of adsorption.
Prerequisite: (CHEM 100 to 481 - at least 4 courses and CS 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 770  Advanced Soil Physics  Credits: 4 (3-2-0)
Course Description: Description and analysis of principles of storage and movement of water, solutes, heat, and gases in soils.
Prerequisite: MATH 261 or SOCR 470.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 784  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 792  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 796  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Soil and Crop Sciences

Soil and Crop Sciences, the studies of field crops and soils, are the foundation sciences underlying the production and management of food, feed, fiber, and energy crops to meet human needs and to protect the
Students are taught the importance of learning soil and crop science principles in alleviating concerns of rapidly increasing world populations, the demand on land for food supplies, and the demand for environmental quality to enhance human comfort and wellbeing. Special emphasis is placed on improved production efficiency and the conservation of soil, chemicals, energy, plants, and water. The curriculum offers broad-based coverage of the basic natural and social sciences, communication skills, and opportunity to explore interests and leadership potential. Seven concentrations allow for specialization in the major:

**Concentrations**

- Agronomic Production Management Concentration
- Applied Information Technology Concentration
- International Soil and Crop Sciences Concentration
- Plant Biotechnology, Genetics, and Breeding Concentration
- Soil Ecology Concentration
- Soil, Land Uses, and Climate Change Concentration
- Soil Restoration and Conservation Concentration

Students do not have to choose a concentration but are given the flexibility to tailor the curriculum to their individual interests. This provides opportunities for students to have a second major in a related discipline. The Department also offers three minors:

**Minors**

- Minor in Soil Resources and Conservation
- Minor in Soil Science
- Organic Agriculture Interdisciplinary Minor

**Learning Outcomes**

Successful students will achieve:

- Technical competencies, including knowledge and understanding of soil and crop science principles, ability to apply these principles to specific issues, and ability to synthesize information, both technical and non-technical, to meet identified needs.
- Problem solving skills, such as identifying a problem, collecting data, summarizing information, and drawing conclusions to the identified problem.
- Professional skills, including interpersonal skills and communication skills, such as presenting a topic with logical development, technical understanding, mechanical and technique correctness, and accurate documentation of sources.

**Potential Occupations**

Participation in internships and cooperative education opportunities is highly recommended to enhance practical training and development. Paid summer internship positions exist for all students in this major, and often lead to a job after graduation. The job outlook for graduates is very optimistic, with more job openings than can be filled in some areas of study. Graduates work for a variety of federal, state, or local government agricultural agencies, state agricultural colleges or research stations, agricultural service companies, commercial research and development labs, and seed companies. Graduates who go on to pursue advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Some examples include: agronomic production manager; cooperative manager; genetic engineering scientists; land reclamation specialist; international agronomist; land-use planner; plant geneticist; plant breeder, seed, chemical, and fertilizer consultant; soil conservation specialist; soil surveyor; waste management specialist; water quality specialist; crop production; chemical fertilizer sales; crop consultant; county agricultural extension agents; agricultural products inspector; farm manager.

**Requirements**

Effective Fall 2011

(http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

<table>
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<tr>
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<tr>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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Biology Electives

Total Credits 29
### Sophomore

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<td>Food and Nutrition in Health Survey of Human Nutrition</td>
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<td>Fundamentals of Ecology (GT-SC2)</td>
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| Total Credits | 30-32 |

### Junior

Select one group from the following: 4-5

**Group A:**
- BZ 440 Plant Physiology
- BZ 441 Plant Physiology Laboratory

**Group B:**
- GEOL 120 Exploring Earth: Physical Geology (GT-SC2) 3A
- GEOL 121 Introductory Geology Laboratory (GT-SC1) 3A
- JTC 300 Professional and Technical Communication (GT-CO3) 2 3
- SOCR 330 Principles of Genetics 3
- Soil and Crop Science Electives 6
- STAT *** Statistics 3
- Technical Electives 10

| Total Credits | 29-30 |

### Senior

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<td>Electives</td>
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| Total Credits | 29-30 |

| Program Total Credits: | 120   |

1. Select from the list of courses in category 3C in the All-University Core Curriculum (AUCC).
2. Select from the list of biology courses in category 3A after consultation with advisor.
3. Select from the Colleges of Agricultural Sciences, Business, Engineering, Natural Resources, Natural Sciences, and/or Veterinary Medicine and Biomedical Sciences in consultation with advisor.
4. Select course(s) with the SOCR subject code.
5. Select a course with the STAT subject code.
6. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
## Major Completion Map

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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### Sophomore

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<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
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<td>Global and Cultural Awareness</td>
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<td>Technical Electives (See allowable subject codes on Program Requirements Tab)</td>
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### Junior

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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
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STAT*** Statistics 3
Soil and Crop Sciences Elective 3
Technical Elective (See allowable subject codes on Program Requirements Tab) 3
BZ 120, LIFE 102, or LIFE 103 (if taking BZ 440) must be completed by the end of Semester 5. X

Total Credits 15

Semester 6

Select one group from the following: 4-5

Group A:
BZ 440 Plant Physiology
BZ 441 Plant Physiology Laboratory

Group B:
GEOL 120 Exploring Earth: Physical Geology (GT-SC2) 3A
GEOL 121 Introductory Geology Laboratory (GT-SC1) 3A

Soil and Crop Sciences Elective 3
Technical Electives (See allowable subject codes on Program Requirements Tab)
SOCR 240 must be completed by the end of Semester 6. X

Total Credits 14

Senior

Semester 7

SOCR 421 Crop and Soil Management Systems II X 4A,4B,4C 4

Select one course from the following: 1

SOCR 486 Practicum
SOCR 487 Internship
SOCR 492 Seminar X 4A 1

Historical Perspectives 3D 3

Technical Elective (See allowable subject codes on Program Requirements Tab)
Elective 3

Total Credits 15

Semester 8

Soil and Crop Sciences Electives X 4
Technical Electives (See allowable subject codes on Program Requirements Tab) X 5
Electives 8

The benchmark courses for the 8th semester are the remaining courses in the entire program of study. X

Total Credits 17

Program Total Credits: 120

Major in Soil and Crop Sciences, Agronomic Production Management Concentration

Agronomic Production Management focuses on methods to improve the nutritional value of crops and the quality of seed, as well as increase productivity. This concentration is best suited for students planning careers in production agriculture and agribusiness. The concentration combines courses in basic sciences, economics, and business management with principles and practices of using soil, plant, and water resources for crop production and agriculture-related organizations and companies.

Requirements
### Effective Fall 2015

#### Freshman

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<td>Historical Perspectives</td>
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#### Sophomore

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Senior

BSPM 302  Applied and General Entomology  2
BSPM 303C  Entomology Laboratory: Agricultural  1
BSPM 308  Ecology and Management of Weeds  3
BSPM 361  Elements of Plant Pathology  3

Select two courses from the following:  6-7

SOCR 320  Forage and Pasture Management
SOCR 322  Principles of Microclimatology
SOCR 430  Applications of Plant Biotechnology
SOCR 440  Pedology
SOCR 455  Soil Microbiology
SOCR 460/HORT 460  Plant Breeding
SOCR 371  Irrigation of Field Crops
SOCR 377  Geographic Information Systems in Agriculture
SOCR 421  Crop and Soil Management Systems II  4A,4B,4C  4
SOCR 486 or 487  Practicum
Internship
SOCR 492  Seminar  4A  1

Agricultural and Resource Economics Elective\(^1\)  3
Department Electives (select from list below)  0-4

Total Credits  28-32

Program Total Credits:  120-124

Department Electives

Soil and Crop Sciences electives are required for the Agronomic Production Management Concentration. Choose any combination of the following suggested courses to meet this requirement.

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<tr>
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<td>BSPM 450</td>
<td>Molecular Plant-Microbe Interaction</td>
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<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
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<td>Plant Physiology Laboratory</td>
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<td>BZ 476</td>
<td>Genetics of Model Organisms</td>
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<td>FSHN 125</td>
<td>Food and Nutrition in Health</td>
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<td>Survey of Human Nutrition</td>
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<td>Medicinal and Value-Added Uses of Plants</td>
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<td>Topics in Organic Agriculture</td>
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<td>HORT 450A</td>
<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
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<td>MIP 300</td>
<td>General Microbiology</td>
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<td>Seed Anatomy and Identification</td>
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<td>SOCR 201</td>
<td>Seed Development and Metabolism</td>
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<td>Seed Purity Analysis</td>
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<td>SOCR 301</td>
<td>Seed Germination and Viability</td>
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<td>SOCR 410</td>
<td>Seed Processes: Storage and Deterioration</td>
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<td>SOCR 411</td>
<td>Large Seeded Legume Seed Production</td>
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<td>SOCR 412</td>
<td>Seed Processes: Separation and Conditioning</td>
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\(^1\) Select from department list of Agricultural and Resource Economics Electives.
## Major Completion Map

### Freshman

**Semester 1**

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<td>Select one course from the following:</td>
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<tr>
<td>AGRI 192</td>
<td>Orientation to Agricultural Systems</td>
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<td>Transfer Seminar</td>
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<td>Principles of Plant Biology (GT-SC1)</td>
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**Total Credits** | | | 15 |

**Semester 2**

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<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>Historical Perspectives</td>
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**CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.** | X |

**Total Credits** | | | 15 |

### Sophomore

**Semester 3**

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<td>Plant Identification</td>
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<td>LAND 220/</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
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<tr>
<td>LIFE 220</td>
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<td>PH 110</td>
<td>Descriptive Physics (GT-SC2)</td>
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<td>Global and Cultural Awareness</td>
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**Total Credits** | | | 15 |

**Semester 4**

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<td>Introductory Soil Science</td>
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<td>Writing Arguments (GT-CO3)</td>
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<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>Principles of Genetics</td>
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## Major in Soil and Crop Sciences, Applied Information Technology Concentration

Applied Information Technology educates students in utilizing advanced information technology to make better decisions in crop, soil, and environmental management systems as well as meet the expanding needs and technological opportunities in industry (consulting/GIS/ GPS/remote sensing). Students will take course work in computer science, data management, business, and various electives in their discipline choice (crop science, soil science, animal science, horticulture, pest management, and related disciplines) to utilize application of advanced information technologies. This understanding will lead to improved environmental stewardship and profitability. Career opportunities exist with equipment companies, consulting firms, state and federal agencies, and agricultural data management firms.

### Requirements
### Effective Fall 2015

#### Freshman

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems</td>
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<td>BUS 150 or CS 110</td>
<td>Business Computing Concepts and Applications</td>
<td>3-4</td>
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<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
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<td>CIS 200</td>
<td>Business Information Systems</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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#### Sophomore

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<td>CIS 210</td>
<td>Information Technology in Business</td>
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<td>CIS 240</td>
<td>Application Design and Development</td>
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<td>PHIL 110</td>
<td>Logic and Critical Thinking (GT-AH3)</td>
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<td>SPCM 200</td>
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<td>Global and Cultural Awareness</td>
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#### Junior

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<td>Writing Arguments (GT-CO3)</td>
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<td>LIFE 220 or 320</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
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<td>CIS 320</td>
<td>Project Management for Information Systems</td>
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<td>Food and Nutrition in Health</td>
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<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
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<td>NR 323/GR 323</td>
<td>Remote Sensing and Image Interpretation</td>
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<tr>
<td>STAT 301 or 307</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>STAT 324 or 325</td>
<td>Introduction to Biostatistics</td>
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<td>SOCR Electives</td>
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<td>Electives</td>
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<tr>
<td>AREC 478</td>
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CIS 355 or STAT 372  
Business Database Systems  
Data Analysis Tools  

NR 423/GR 323  
Applications of Global Positioning Systems  

SOCR 377  
Geographic Information Systems in Agriculture  

SOCR 487  
Internship  

SOCR 492  
Seminar  

SOCR Electives$^{1,2}$  

Electives$^1$  

Total Credits  

Program Total Credits: 120

1 Of the 9 SOCR elective credits and 17-18 general elective credits, 12 must be upper division (300- and 400-level). Select enough elective credits to bring program total to 120, of which 42 must be upper division.

2 Select from courses with the SOCR subject code, in consultation with advisor.

### Major Completion Map

#### Freshman

**Semester 1**

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<th>Recommended</th>
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<td>AGRI 292</td>
<td>Transfer Seminar</td>
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<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<td>CS 110</td>
<td>Personal Computing</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<tr>
<td>SOCR 100</td>
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Total Credits: 15

**Semester 2**

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<tr>
<td>CHEM 107</td>
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<td>CHEM 108</td>
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<td>Descriptive Physics (GT-SC2)</td>
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<td>SOCR 177</td>
<td>Applied Information Technology in Agriculture</td>
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CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.

X

Total Credits: 15

**Sophomore**

**Semester 3**

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<tr>
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<td>Information Technology in Business</td>
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<td>CIS 240</td>
<td>Application Design and Development</td>
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<td>Arts and Humanities</td>
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<tr>
<td>Global and Cultural Awareness</td>
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Total Credits: 15

**Semester 4**

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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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X

Total Credits: 15
Major in Soil and Crop Sciences, Applied Information Technology Concentration

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<td>Historical Perspectives</td>
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**Junior**

**Semester 5**

Select one course from the following:

- **Life 220 Fundamentals of Ecology (GT-SC2)**
- **Life 320 Ecology**
- **NR 322 Introduction to Geographic Information Systems**
- **NR 323/GR 323 Remote Sensing and Image Interpretation**

Select one course from the following:

- **STAT 301 Introduction to Statistical Methods**
- **STAT 307 Introduction to Biostatistics**

**SOCR Elective (See List on Concentration Requirements Tab)**

**Total Credits**: 16

**Semester 6**

- **CIS 320 Project Management for Information Systems**

Select one course from the following:

- **CO 300 Writing Arguments (GT-CO3)**
- **JTC 300 Professional and Technical Communication (GT-CO3)**

Select one course from the following:

- **FShN 125 Food and Nutrition in Health**
- **FShN 150 Survey of Human Nutrition**

**Electives**: 5-6

**AREC 202 must be completed by the end of Semester 6.**

**Total Credits**: 14

**Senior**

**Semester 7**

- **AREC 478 Agricultural Policy**

Select one course from the following:

- **CIS 355 Business Database Systems**
- **STAT 372 Data Analysis Tools**
- **SOCR 377/CIVE 377 Geographic Information Systems in Agriculture**
- **SOCR 492 Seminar**

**SOCR Elective (See List on Concentration Requirements Tab)**

**Elective**: 3

**NR 322 must be completed by the end of Semester 7.**

**Total Credits**: 16

**Semester 8**

- **NR 423 Applications of Global Positioning Systems**
- **SOCR 487 Internship**
- **SOCR Elective (See List on Concentration Requirements Tab)**

**Electives**: 3-4

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

**Total Credits**: 13

**Program Total Credits**: 120
Major in Soil and Crop Sciences, Biomass for Biofuels Concentration

Students are no longer being admitted to this concentration. Students currently enrolled in this concentration should consult with their advisor regarding degree completion requirements.

Major in Soil and Crop Sciences, International Soil and Crop Sciences Concentration

International Soil and Crop Sciences prepares students to work in developing nations by giving them technical soil and crop science skills along with education in the political, social, and cultural aspects of countries they may work in. Scientists design appropriate practices that can succeed under a variety of climatic and socioeconomic constraints. Many research opportunities are available. Students may work with the Peace Corps or other agencies in demonstration and extension positions in developing countries.

Requirements

Effective Fall 2015

Freshman

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<th>Course</th>
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<tr>
<td>AGRI 192 or 292</td>
<td>Orientation to Agricultural Systems</td>
<td>Transfer Seminar</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
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<td>Group A:</td>
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<td>CHEM 107</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>Group B:</td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
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<tr>
<td>FSHN 125 or 150</td>
<td>Food and Nutrition in Health</td>
<td>Survey of Human Nutrition</td>
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<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>SOCR 100</td>
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Total Credits: 28-33

Sophomore

Select one course from the following:

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<tr>
<td>ANTH 100</td>
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<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
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<td>SOC 105</td>
<td>Social Problems (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>AGRI 270/IE 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
<td>3E</td>
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<td>ANEQ 101</td>
<td>Food Animal Science</td>
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<tr>
<td>LAND 220/LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>PH 110</td>
<td>Descriptive Physics (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>POLS 131</td>
<td>Current World Problems (GT-SS1)</td>
<td>3E</td>
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<tr>
<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
<td>3E</td>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<tr>
<td>Course</td>
<td>Title</td>
<td>Credits</td>
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<td>SPCM 200</td>
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### Junior

- **JTC 300 or CO 301B** Professional and Technical Communication (GT-CO3) 2 3
- **POLS 332/ECON 332** International Political Economy 3
- Select two courses from the following: 6
  - ANTH 310 Peoples and Cultures of Africa 2
  - ANTH 312 Modern Indian Culture and Society 2
  - ANTH 314 Southeast Asian Cultures and Societies 2
  - ANTH 446 New Orleans and the Caribbean 2
  - SOC 320 Population-Natural Resources and Environment 2
  - SOC 341 Sociology of Rural Life 2
  - SOC 364 Agriculture and Global Society 2
  - SOC 366 Peoples and Institutions of Latin America 2
- **SOCR 330** Principles of Genetics 3
- **SOCR 350** Soil Fertility Management 3
- **SOCR 351** Soil Fertility Laboratory 1
- **SOCR 370** Irrigation Principles 2
- Select one course from the following: 3
  - STAT 201 General Statistics
  - STAT 301 Introduction to Statistical Methods
  - STAT 307 Introduction to Biostatistics
- **Arts and Humanities** 3B 3
- **Electives** 1-2
- **Total Credits** 28-29

### Senior

- **AREC 460** Ag- and Resource-Based Economic Development 3
- Select two of the following three groups: 6
  - **Group A:**
    - BSPM 302 Applied and General Entomology
    - BSPM 303C Entomology Laboratory: Agricultural
  - **Group B:**
    - BSPM 308 Ecology and Management of Weeds
  - **Group C:**
    - BSPM 361 Elements of Plant Pathology
- **BZ 440** Plant Physiology 3
- **SOCR 371** Irrigation of Field Crops 1
- **SOCR 421** Crop and Soil Management Systems II 4A,4B,4C 4
- **SOCR 475** Global Challenges in Plant and Soil Science 3
- **SOCR 486 or 487** Practicum 1-3
- **Internship** 1-3
- **SOCR 492** Seminar 4A 1
- **Electives** 1 4-10
- **Total Credits** 26-34

**Program Total Credits:** 120-122

1 Select enough elective credits to bring the program total to 120-122 credits, of which 42 must be upper division.
## Major Completion Map

### Freshman

#### Semester 1

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<td>Orientation to Agricultural Systems</td>
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<td>Principles of Plant Biology (GT-SC1)</td>
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<td>CO 150</td>
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<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<td>MATH 118</td>
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<td>SOCR 100</td>
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Total Credits: 15

#### Semester 2

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<td>Group A:</td>
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Select one course from the following:

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Total Credits: 13

#### Sophomore

#### Semester 3

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<td>Current World Problems (GT-SS1)</td>
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Total Credits: 16

#### Semester 4

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<td>Descriptive Physics (GT-SC2)</td>
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<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
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<td>3E</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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Historical Perspectives: 3D, 3

BZ 120 must be completed by the end of Semester 4. | X |

Total Credits: 16
### Junior

#### Semester 5

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<td>Principles of Genetics</td>
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<td>SOCR 350</td>
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<td>Soil Fertility Management</td>
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<td>SOCR 351</td>
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<td>Soil Fertility Laboratory</td>
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Select one course from the following:

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<th>Credits</th>
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<td>CO 301B</td>
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<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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Arts and Humanities

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Elective

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AREC 202 and POLS 232 must be completed by the end of Semester 5.

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<th>AUCC</th>
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**Total Credits: 14**

#### Semester 6

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<td>International Political Economy</td>
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<td>ECON 332</td>
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Select two courses from the following:

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<td>ANTH 312</td>
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<td>Modern Indian Culture and Society</td>
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<td>Southeast Asian Cultures and Societies</td>
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<td>ANTH 446</td>
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<td>New Orleans and the Caribbean</td>
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<td>Population-Natural Resources and Environment</td>
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<td>SOC 341</td>
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<td>Sociology of Rural Life</td>
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<td>Agriculture and Global Society</td>
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<td>Peoples and Institutions of Latin America</td>
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Select one course from the following:

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<tr>
<td>STAT 201</td>
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<td>Introduction to Biostatistics</td>
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<td>SOCR 370</td>
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<td>Irrigation Principles</td>
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**Total Credits: 14**

### Senior

#### Semester 7

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<tr>
<td>SOCR 371</td>
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<td>Irrigation of Field Crops</td>
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<td>SOCR 421</td>
<td></td>
<td>Crop and Soil Management Systems II</td>
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Select two groups from the following:

**Group A:**

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<tr>
<td>BSPM 302</td>
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<td>Applied and General Entomology</td>
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<td>BSPM 303C</td>
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<td>Entomology Laboratory: Agricultural</td>
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**Group B:**

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<tr>
<td>BSPM 308</td>
<td></td>
<td>Ecology and Management of Weeds</td>
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**Group C:**

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<td>BSPM 361</td>
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<td>Elements of Plant Pathology</td>
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Electives

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**Total Credits: 17**

#### Semester 8

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<tbody>
<tr>
<td>AREC 460</td>
<td></td>
<td>Ag- and Resource-Based Economic Development</td>
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<td>BZ 440</td>
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<td>Plant Physiology</td>
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<td>SOCR 475</td>
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<td>Global Challenges in Plant and Soil Science</td>
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Select one course from the following:

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<td>SOCR 486</td>
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<td>Practicum</td>
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Electives  
X  
2-5

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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Total Credits  
X  
15-17

Program Total Credits:  
120-122

Major in Soil and Crop Sciences, Plant Biotechnology, Genetics, and Breeding Concentration

The Plant Biotechnology, Genetics, and Breeding concentration provides expertise in the fundamentals of plant molecular biology and their application to crop improvement. The focus is on the integration of new DNA-based methods with the principles of plant breeding and genetics to enhance production. Graduates work in plant breeding and biotechnology companies and public research institutions, or continue with graduate work.

Requirements

Effective Fall 2012

Freshman

<table>
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<th>Course</th>
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<tr>
<td>AGRI 192</td>
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<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
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<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
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<td>MATH 126</td>
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<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>SOCR 100</td>
<td>General Crops</td>
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Sophomore

Select one from the following:  
3

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<tbody>
<tr>
<td>AGRI 116</td>
<td>Plants and Civilizations (GT-SS3)</td>
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<td>AGRI 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
<td>3E</td>
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<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>FSHN 125 or 150</td>
<td>Food and Nutrition in Health Survey of Human Nutrition</td>
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<td>PH 110</td>
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<td>PHIL 110</td>
<td>Logic and Critical Thinking (GT-AH3)</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>Historical Perspectives</td>
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Junior

BC 351 Principles of Biochemistry  
4

Select eight credits from the following:  
8
Major in Soil and Crop Sciences, Plant Biotechnology, Genetics, and Breeding Concentration

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<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
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<td>BSPM 450</td>
<td>Molecular Plant-Microbe Interaction</td>
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<td>BSPM 451</td>
<td>Integrated Pest Management</td>
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<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
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<td>BZ 402</td>
<td>Molecular Cytogenics</td>
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<td>BZ 476</td>
<td>Genetics of Model Organisms</td>
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<tr>
<td>HORT 401</td>
<td>Medicinal and Value-Added Uses of Plants</td>
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<tr>
<td>HORT 424/SOCR 424</td>
<td>Topics in Organic Agriculture</td>
</tr>
<tr>
<td>HORT 450A</td>
<td>Horticulture Food Crops: Cool Season Vegetable Production</td>
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<tr>
<td>HORT 450B</td>
<td>Horticulture Food Crops: Warm Season Vegetable Production</td>
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<tr>
<td>HORT 450C</td>
<td>Horticulture Food Crops: Small Fruit Production</td>
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<tr>
<td>HORT 450D</td>
<td>Horticulture Food Crops: Tree Fruit Production</td>
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<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
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<td>MIP 450</td>
<td>Microbial Genetics</td>
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Select two groups from the following: 6

**Group A:**
- BSPM 302 Applied and General Entomology
- BSPM 303C Entomology Laboratory: Agricultural

**Group B:**
- BSPM 308 Ecology and Management of Weeds

**Group C:**
- BSPM 361 Elements of Plant Pathology

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<tr>
<td>BZ 310</td>
<td>Cell Biology</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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**Electives**

**Total Credits** 31

**Senior**

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<td>BZ 440</td>
<td>Plant Physiology</td>
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Select one from the following: 3

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<tr>
<td>HORT 460/SOCR 460</td>
<td>Plant Breeding</td>
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<td>Applications of Plant Biotechnology</td>
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<td>SOCR 486</td>
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**Arts and Humanities** 3B

**Soil and Crop Electives** 8

Select a minimum of 8 credits from the following suggested courses:

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<td>SOCR 344</td>
<td>Crop Development Techniques</td>
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<td>SOCR 350</td>
<td>Soil Fertility Management</td>
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<td>SOCR 370</td>
<td>Irrigation Principles</td>
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<td>SOCR 377</td>
<td>Geographic Information Systems in Agriculture</td>
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<td>SOCR 410</td>
<td>Seed Processes: Storage and Deterioration</td>
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<td>SOCR 411</td>
<td>Large Seeded Legume Seed Production</td>
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<td>SOCR 412</td>
<td>Seed Processes: Separation and Conditioning</td>
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<td>SOCR 421</td>
<td>Crop and Soil Management Systems II</td>
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<td>SOCR 455</td>
<td>Soil Microbiology</td>
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<td>SOCR 475</td>
<td>Global Challenges in Plant and Soil Science</td>
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<td>SOCR 495</td>
<td>Independent Study</td>
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Electives 1 5-6

Program Total Credits: 24-25

1 Select enough elective credits to bring the program total to 120, with a minimum of 42 upper division credits.

## Major Completion Map

### Freshman

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<td>CHEM 111 General Chemistry I (GT-SC2)</td>
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<td>CHEM 112 General Chemistry Lab I (GT-SC1)</td>
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<td>MATH 125 Numerical Trigonometry (GT-MA1)</td>
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<td>CHEM 114 General Chemistry Lab II</td>
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<td>CO 150 College Composition (GT-CO2)</td>
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<td>LIFE 103 Biology of Organisms-Animals and Plants</td>
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<td>MATH 126 Analytic Trigonometry (GT-MA1)</td>
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<td>MATH 155 Calculus for Biological Scientists I (GT-MA1)</td>
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### Sophomore

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<td>CHEM 246 Fundamentals of Organic Chemistry Laboratory</td>
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<td>PH 110 Descriptive Physics (GT-SC2)</td>
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<td>SOCR 240 Introductory Soil Science</td>
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<td>LIFE 102 must be completed by the end of Semester 3.</td>
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<td>PHIL 110 Logic and Critical Thinking (GT-AH3)</td>
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<td>SOCR 330 Principles of Genetics</td>
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<td>SPCM 200 Public Speaking</td>
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<td>Historical Perspectives</td>
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1 Select enough elective credits to bring the program total to 120, with a minimum of 42 upper division credits.
CHEM 245 must be completed by the end of Semester 4.

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<td>Principles of Biochemistry</td>
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<td>Group A:</td>
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<td>Elements of Plant Pathology</td>
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| Elective | | | | | 3
| Genetics or Horticulture Electives (See Department List on Concentration Requirements tab) | | | | | 4

Total Credits: 17

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<td>Cell Biology</td>
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| JTC 300 | Professional and Technical Communication (GT-CO3) | 2 | | | 3
| | Select one course from the following: | | | | |
| STAT 301 | Introduction to Statistical Methods | 3 | | | |
| STAT 307 | Introduction to Biostatistics | | | | |
| Genetics or Horticulture Electives (See Department List on Concentration Requirements tab) | | | | | 4
| SOCR 330 must be completed by the end of Semester 6. | | | | | X

Total Credits: 17

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| SOCR 430 | Applications of Plant Biotechnology | 3 | | | 4A,4B,4C
| SOCR 460/ HORT 460 | Plant Breeding | | | | 4A,4B,4C
| SOCR 492 | Seminar | X | | | 4A
| Arts and Humanities | | | | | 3B
| Soil and Crop Electives (See Department List on Concentration Requirements tab) | | | | | 5
| Elective | | | | | 3

Total Credits: 14

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| BZ 440 | Plant Physiology | X | | | 3
| SOCR 486 | Practicum | X | | | 4C
| Soil and Crop Elective (See Department List on Concentration Requirements tab) | | | | | X
| Elective | | | | | 3
| The benchmark courses for the 8th semester are the remaining courses in the entire program of study. | | | | | X

Total Credits: 15

Program Total Credits: 120
Major in Soil and Crop Sciences, Soil Ecology Concentration

The Soil Ecology concentration emphasizes the interdisciplinary nature of soils through the study of soil organisms and their interactions with each other and the soil physical and chemical environment. These interactions affect the cycling of elements including carbon and nitrogen, the release (or consumption) of greenhouse gases, water quality, soil formation and structure, and plant productivity. The curriculum is rigorous and includes a solid core of mathematics, biology, physics and chemistry courses, as well as specialized electives and ecology courses that allow students to tailor the concentration to their interests. Career opportunities exist in academia, state and federal health and environmental agencies, natural resource agencies (water and soil), state and national parks services, private industry as environmental assessors, and in the rapidly growing environmental consulting profession.

Requirements

Effective Fall 2015

Freshman

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<th>Course</th>
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<td>Issues in Environmental Economics (GT-SS1)</td>
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<td>General Chemistry Lab I (GT-SC1)</td>
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<td>General Chemistry II</td>
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<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>Calculus for Biological Scientists I (GT-MA1)</td>
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Sophomore

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<td>GEOL 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
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<td>GEOL 121</td>
<td>Introductory Geology Laboratory (GT-SC1)</td>
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<td>LAND 220/LIFE 220 or LIFE 320</td>
<td>Fundamentals of Ecology (GT-SC2) Ecology</td>
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<td>General Physics I (GT-SC1)</td>
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Junior

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<td>BC 351</td>
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<td>CO 301B or JTC 300</td>
<td>Writing in the Disciplines: Sciences (GT-CO3) Professional and Technical Communication (GT-CO3)</td>
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<td>NR 319</td>
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<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
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<td>SOCR 377</td>
<td>Geographic Information Systems in Agriculture</td>
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<td>Principles of Microclimatology</td>
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<td>Global and Cultural Awareness</td>
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**Senior**

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<td>SOCR 421</td>
<td>Crop and Soil Management Systems II</td>
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<td>SOCR 455</td>
<td>Soil Microbiology</td>
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**Soil Ecology Technical Electives Department List**

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<td>Ecology and Management of Weeds</td>
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<td>BSPM 526/BZ 526</td>
<td>Evolutionary Ecology</td>
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<td>BSPM 570</td>
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<td>Theory of Population and Evolutionary Ecology</td>
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<td>Global Change Ecology, Impacts and Mitigation</td>
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<td>BZ 561</td>
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<td>NR 220</td>
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<td>RS 478</td>
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<td>Principles of Genetics</td>
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<td>Microbiology for Sustainable Agriculture</td>
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<td>Organic Soil Fertility</td>
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## Major Completion Map

### Freshman

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### Semester 2

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<tr>
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<td>STAT 301 Introduction to Statistical Methods</td>
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<td>SOCR 440 Pedology</td>
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<td></td>
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NR 319  Geospatial Applications in Natural Resources
NR 322  Introduction to Geographic Information Systems
SOCR 377  Geographic Information Systems in Agriculture

Global and Cultural Awareness

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Total Credits 14

Semester 6

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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>SOCR 322</td>
<td>Principles of Microclimatology</td>
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Historical Perspectives 3D

Technical Electives (See Department List on Concentration Requirements tab) 6

Total Credits 15

Senior

Semester 7

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<td>Soil Microbiology</td>
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<td>Soil Microbiology Laboratory</td>
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Technical Elective (See Department List on Concentration Requirements tab) 3

Total Credits 16

Semester 8

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<th>Credits</th>
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<td>Practicum</td>
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<td>SOCR 487</td>
<td>Internship</td>
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Technical Electives (See Department List on Concentration Requirements tab) 10

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 14

Program Total Credits: 120

Major in Soil and Crop Sciences, Soil Restoration and Conservation Concentration

Soil Restoration and Conservation graduates provide technical assistance to farmers, ranchers, state and local governments, and others concerned with the conservation of soil, water, and related natural resources. Emphasis is on interpretations of land sustainability for agricultural, urban, industrial, and recreational land uses, waste disposal, water management systems, and ecological purposes. Specialists develop programs designed to obtain the most productive use of land while minimizing or mitigating damages. Others help landowners and managers develop management practices to combat erosion. Students are prepared for careers in environmental consulting, government conservation and resource management agencies, farm management, and municipal soil and water resource management agencies.

Requirements

Effective Fall 2015

Freshman

<table>
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<td>Orientation to Agricultural Systems</td>
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<td>Transfer Seminar</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>Course Code</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
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<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>LAND 220/LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
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<td>Fundamentals of Organic Chemistry</td>
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<td>Irrigation Principles</td>
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<td>Geographic Information Systems in Agriculture</td>
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<td>Soil Microbiology</td>
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Major in Soil and Crop Sciences, Soil Restoration and Conservation Concentration

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Program Total Credits: 120

1 Select from list of department electives.

### Major Completion Map

#### Freshman

**Semester 1**

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**Semester 2**

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#### Sophomore

**Semester 3**

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**Semester 4**

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<td>Global and Cultural Awareness</td>
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<td>Historical Perspectives</td>
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#### Junior

**Semester 5**

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<td>SOCR 350</td>
<td>Soil Fertility Management</td>
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<td>SOCR 351</td>
<td>Soil Fertility Laboratory</td>
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<td>SOCR 377</td>
<td>Geographic Information Systems in Agriculture</td>
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</table>
### Major in Soil and Crop Sciences, Soil, Land Uses, and Climate Change Concentration

The Soil, Land Uses, and Climate Change concentration prepares students to become critical thinkers, address new and emerging issues and be versatile in multidisciplinary settings, while having a deep understanding of soils and soil processes, being knowledgeable of global and cultural issues, and possessing specialized technical skills in agricultural GHG management and inventory. A broad base of course work in soils, agriculture, ecology, statistics, economics, and climate change science as well as internship opportunities will prepare students for the climate change work force.

**Requirements**

### Effective Fall 2015

#### Freshman

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<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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Major in Soil and Crop Sciences, Soil, Land Uses, and Climate Change Concentration

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Major Completion Map

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**Sophomore**

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**Junior**

**Semester 5**

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**Senior**

**Semester 7**

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Soil, Land Use and Global Change Electives (See Department List on Concentration Requirements tab)

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits: 14

Program Total Credits: 120

**Minor in Soil Resources and Conservation**

The purpose of the minor in Soil Resources and Conservation is to give students with appropriate biological sciences background the opportunity to formalize their interests in an organized course of study.

**Requirements**

**Effective Fall 2012**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Division</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCRe240</td>
<td>Introductory Soil Science</td>
<td>4</td>
</tr>
<tr>
<td>Upper Division</td>
<td></td>
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</tr>
<tr>
<td>BZe440</td>
<td>Plant Physiology</td>
<td>3</td>
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<tr>
<td>GEOLE454</td>
<td>Geomorphology</td>
<td>4</td>
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</table>

Select six credits from the following:

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SOCRe320</td>
<td>Forage and Pasture Management</td>
<td>3</td>
</tr>
<tr>
<td>SOCRe370</td>
<td>Irrigation Principles</td>
<td>3</td>
</tr>
<tr>
<td>SOCRe371</td>
<td>Irrigation of Field Crops</td>
<td>3</td>
</tr>
<tr>
<td>SOCRe455</td>
<td>Soil Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>SOCRe350</td>
<td>Soil Fertility Management</td>
<td>3</td>
</tr>
<tr>
<td>SOCRe351</td>
<td>Soil Fertility Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>SOCRe421</td>
<td>Crop and Soil Management Systems II</td>
<td>4</td>
</tr>
<tr>
<td>SOCRe440</td>
<td>Pedology</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one of the following groups:

Group A:

- SOCRe467 Soil and Environmental Chemistry

Group B:

- SOCRe470 Soil Physics
- SOCRe471 Soil Physics Laboratory

Total Credits: 32-33

**Minor in Soil Science**

Soil Science as a discipline has applications to many fields of study, including biology, ecology, engineering, horticulture, and hydrology. The purpose of the minor in Soil Science is to combine the fundamental sub-

disciplines of soil science to provide non-majors the essential elements of soil science.

**Requirements**

**Effective Fall 2014**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCRe240</td>
<td>Introductory Soil Science</td>
<td>4</td>
</tr>
<tr>
<td>SOCRe440</td>
<td>Pedology</td>
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<tr>
<td>SOCRe455</td>
<td>Soil Microbiology</td>
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</tr>
<tr>
<td>SOCRe470</td>
<td>Soil Physics</td>
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**Selected Courses**

Select a minimum of 7 credits from the following courses:

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>SOCRe322</td>
<td>Principles of Microclimatology</td>
<td>3</td>
</tr>
<tr>
<td>SOCRe350</td>
<td>Soil Fertility Management</td>
<td>3</td>
</tr>
<tr>
<td>SOCRe351</td>
<td>Soil Fertility Laboratory</td>
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<tr>
<td>SOCRe441</td>
<td>Soil Ecology</td>
<td>4</td>
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<tr>
<td>SOCRe456</td>
<td>Soil Microbiology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>SOCRe467</td>
<td>Soil and Environmental Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>SOCRe471</td>
<td>Soil Physics Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>SOCRe490</td>
<td>Hydrus-1D Workshop</td>
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</tr>
<tr>
<td>SOCRe522</td>
<td>Micrometeorology</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits: 21

**College of Business**

Office in Rockwell Hall North Lobby
(970) 491-6471
Undergraduate Majors

Major in Business Administration

- Accounting Concentration
- Finance Concentration
- Financial Planning Concentration
- Human Resource Management Concentration
- Information Systems Concentration
- Marketing Concentration
- Organization and Innovation Management Concentration
- Real Estate Concentration
- Supply Chain Management Concentration

Undergraduate Minors

- Business Administration
- Real Estate

Undergraduate Certificates

- Business-To-Business-Selling
- Customer Experience Management
- Entrepreneurship
- Information Technology for Business Professionals
- International Business
- Leadership in Organizations
- Managing Human Resources
- Market Research and Data Analytics
- Marketing Communication and Branding
- Operations, Logistics and Supply Management
- Real Estate Practices
- Strategic Marketing

For a complete list of departmental offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Master’s Programs

- Master of Business Administration
- Master of Business Administration, Early Career Track Specialization
- Master of Business Administration, Global Social and Sustainable Enterprise Specialization
- Master of Science in Business Administration, Plan A, Computer Information Systems Specialization
- Master of Science in Business Administration, Plan B, Computer Information Systems Specialization
- Master of Science in Business Administration, Financial Risk Management Specialization

The College of Business is accredited by the AACSB, the Association to Advance Collegiate Schools of Business. Undergraduate and graduate programs offered include a Bachelor of Science in Business Administration, a Master of Science in Business Administration (with specializations in Computer Information Systems and Financial Risk Management), as well as a Master of Business Administration degree (M.B.A., with specializations in Early Career Track and Global Social and Sustainable Enterprise), Master of Accountancy (M.Acc.), Master of Management Practice (M.M.P.), and Master of Computer Information Systems (M.C.I.S.).

Undergraduate Programs

The undergraduate programs of study provide functional business education in Accounting, Finance, Financial Planning, Information Systems, Marketing, Organization and Innovation Management, Human Resource Management, Supply Chain Management, and Real Estate. The skills acquired help prepare students for entry-level positions in a wide range of both private and public enterprises and provide a solid foundation for further academic study. The program follows a philosophy of linking theory with practical application.

Education Abroad

Education abroad programs are available to students in the College of Business. Because the knowledge of other cultures is valuable in understanding our own, students are strongly encouraged to take a summer or semester to study, intern, or complete a service learning program outside the United States as part of their overall program at CSU. Students interested in education abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Graduate Programs in Business

The College of Business offers graduate programs leading to the degrees of Master of Science (M.S.), with specializations in Computer Information Systems and Financial Risk Management, and Master of Business Administration (M.B.A.) with specializations in Early Career Track, and Global Social and Sustainable Enterprise. In addition, the College of Business offers a Master of Accountancy (M.Acc.), with a specialization in Taxation; Master of Computer Information Systems (M.C.I.S.); and Master of Management Practice (M.M.P.). The college also offers five platforms for the M.B.A.: on-campus/evening professional M.B.A., a professional online M.B.A., Global Social Sustainable Enterprise M.B.A., Early Career Track M.B.A., and an executive M.B.A. program in Denver. Graduate students may also pursue teacher licensure at the secondary level for Business Education or Marketing Education. Contact the Center for Educator Preparation (http://cep.chhs.colostate.edu) in the Education Building, Room 111, or at (970) 491-5292.

Students interested in graduate work should refer to the College of Business (http://biz.colostate.edu).

Department of Accounting
Undergraduate

Major in Business Administration

• Accounting Concentration

Graduate

Master Programs

• Master of Accountancy, Plan C, (M.Acc.)
• Master of Accountancy, Plan C, Taxation Specialization

Certificate

• Graduate Certificate in Accounting Ethics and Auditing

Courses

Accounting (ACT)

ACT 205 Fundamentals of Accounting Credits: 3 (3-0-0)
Course Description: Understanding of financial statements to support financial and managerial decision making.
Prerequisite: None.
Registration Information: For nonbusiness majors. Credit not allowed for both ACT 205 and ACT 210. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 210 Introduction to Financial Accounting Credits: 3 (3-0-0)
Course Description: Use of accounting information by decision makers; development of the basic accounting model, and issues concerning income and cash flows.
Prerequisite: None.
Registration Information: Credit not allowed for both ACT 210 and ACT 205.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 211 Accounting Professional Skills Credit: 1 (1-0-0)
Course Description: Survey of accounting profession career options, certifications, and professional skills.
Prerequisite: ACT 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 220 Introduction to Managerial Accounting Credits: 3 (3-0-0)
Course Description: Use of accounting information in internal decision making.
Prerequisite: (ACT 205 or ACT 210) and (BUS 150, may be taken concurrently or CS 110, may be taken concurrently).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 311 Intermediate Accounting I Credits: 4 (3-0-1)
Course Description: Preparation and analysis of financial statements under U.S. generally accepted accounting principles (GAAP); accounting for revenue and assets.
Prerequisite: (ACT 205 with a minimum grade of B- or ACT 210 with a minimum grade of B-) and (ACT 220 with a minimum grade of B-).
Registration Information: Credit not allowed for both ACT 311 and ACT 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 312 Intermediate Accounting II Credits: 3 (3-0-0)
Course Description: Equity structure of corporations; analysis and interpretation of accounting data.
Prerequisite: ACT 311 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 321 Cost Management Credits: 3 (3-0-0)
Course Description: Utilizing budgetary and cost accounting information for planning, controlling, and decision-making.
Prerequisite: ACT 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 330 Introduction to Taxation Credits: 3 (3-0-0)
Course Description: Introduction to U.S. taxation, with emphasis on federal income tax; impact of taxation on business decisions.
Prerequisite: ACT 205 or ACT 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 350 Accounting Information Systems Credits: 3 (3-0-0)
Course Description: Design, administration and control of accounting information systems; use of accounting systems software.
Prerequisite: ACT 220 and ACT 321.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 411 Advanced Accounting Credits: 3 (3-0-0)
Course Description: Accounting for branches and subsidiaries, partnerships, and business combinations. Accounting for multi-national business transactions.
Prerequisite: ACT 312.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 430 Income Tax Accounting Credits: 3 (3-0-0)
Course Description: Basic structure of federal income tax law; impact of taxes on decision making; social security taxes.
Prerequisite: ACT 330.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ACT 431 Corporate Taxation  Credits: 3 (3-0-0)
Course Description: Federal income tax principles pertaining to formation and operation of corporate entities.
Prerequisite: ACT 220 and ACT 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 441 Auditing Practices  Credits: 3 (3-0-0)
Course Description: Environment, professional standards, and practices involved in auditing financial statements and performance of other assurance services.
Prerequisite: ACT 312 and ACT 350.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 487 Internship  Credits: Var[1-18] (0-0-0)
Course Description: Supervised work experience in public, industry, or governmental accounting.
Prerequisite: None.
Terms Offered: Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ACT 495 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 496 Group Study  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 498 Research  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

ACT 501 Accounting for Global Sustainable Enterprise  Credits: 3 (3-0-0)
Course Description: Basics of U.S. and international financial reporting; accounting issues of not-for-profit enterprises; budgeting; managerial decision making.
Prerequisite: None.
Registration Information: Admission to GSSE Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 541 Forensic Accounting and Fraud Auditing  Credits: 3 (3-0-0)
Course Description: Professional practices for addressing the related areas of forensic accounting and fraud.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 540 Professional Ethics and Responsibilities  Credits: 3 (3-0-0)
Course Description: Ethical practice of professional accounting.
Prerequisite: ACT 311.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 550 Accounting Information Technologies  Credits: 3 (3-0-0)
Course Description: Best practices for information technologies used in accounting systems worldwide.
Prerequisite: ACT 350.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 561 Legal and Regulatory Issues in Accounting  Credits: 3 (3-0-0)
Course Description: Contracts, ownership, bankruptcy (debtor/creditor relationship), formation of business entities, regulation of accounting profession.
Prerequisite: BUS 205 or BUS 260.
Registration Information: Graduate standing or written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 570 Government and Nonprofit  Credits: 3 (3-0-0)
Course Description: Theory and practical application of accounting principles and auditing standards to governmental entities and not-for-profit organizations.
Prerequisite: ACT 441, may be taken concurrently.
Registration Information: Graduate standing or written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 575 Oil and Gas Accounting  Credits: 3 (3-0-0)
Course Description: Specialized financial accounting procedures related to the oil and gas industry.
Prerequisite: ACT 311.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 600 Accounting for Managers  Credits: 3 (3-0-0)
Course Description: Cost management, budgeting, profitability analysis and decision making.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Admission to a master’s program in business.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ACT 601A  Professional Practice: Taxation  Credits: 3 (3-0-0)
Course Description: Management of accounting practice; professional ethics and regulation; research techniques.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 601B  Professional Practice: Auditing  Credits: 3 (3-0-0)
Course Description: Management of accounting practice; professional ethics and regulation; research techniques.
Prerequisite: ACT 612.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 612  Issues in Financial Reporting and Auditing  Credits: 3 (3-0-0)
Course Description: Contemporary and emerging issues at the intersection of financial reporting and auditing.
Prerequisite: ACT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 614  Financial Statement Analysis and Valuation  Credits: 3 (3-0-0)
Course Description: Tools and techniques of financial statement analysis and application to equity valuation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admitted to Master of Accountancy (M.Acc.) program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 631  Corporate Taxation  Credits: 3 (3-0-0)
Course Description: Federal income tax principles pertaining to formation and operation of corporate entities.
Prerequisite: ACT 220 and ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 633  Flow-Through Entities  Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems pertaining to flow-through entities.
Prerequisite: ACT 220.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 635  State and Local Taxation  Credits: 3 (3-0-0)
Course Description: Tax planning and compliance issues for entities doing business in multi-jurisdictional locales.
Prerequisite: ACT 220.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 636  Taxation of Corporations and Shareholders  Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems relating to reorganization, consolidation, and termination of corporations.
Prerequisite: ACT 220.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 639  Special Topics in Taxation  Credits: 3 (3-0-0)
Course Description: Taxation of not-for-profit entities; international tax issues; other contemporary topics.
Prerequisite: ACT 601A and ACT 631.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 641  Contemporary Auditing  Credits: 3 (3-0-0)
Course Description: Seminar exploring various facets of the assurance services environment.
Prerequisite: ACT 441.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 650  Advanced Accounting Information Systems  Credits: 3 (3-0-0)
Course Description: Research and review of best practices for technology in organizational accounting processes, including advanced skills in spreadsheets and databases.
Prerequisite: ACT 350.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ACT 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Graduate Certificate in Accounting Ethics and Auditing

Completion of the certificate provides increased expertise in accounting ethics, forensic accounting, fraud auditing, and leading best practice information technologies used in organizational accounting systems worldwide. The graduate coursework is designed in part to help individuals meet professional licensure requirements in Colorado and certain other states.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

<table>
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<tr>
<th>Code</th>
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<th>Credits</th>
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<tr>
<td>ACT 540</td>
<td>Professional Ethics and Responsibilities</td>
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<tr>
<td>ACT 541</td>
<td>Forensic Accounting and Fraud Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACT 550</td>
<td>Accounting Information Technologies</td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
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</tbody>
</table>

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Major in Business Administration, Accounting Concentration

This program is designed to give students an understanding of the theory and practice of the major fields of accounting: financial accounting and reporting, managerial accounting, taxation, accounting information systems, and auditing. Accountants provide financial information and documentation about businesses to managers, investors, creditors, and other interested parties. Accounting can be categorized into management accounting, which provides information for internal decision makers (e.g., managers); and financial accounting, which provides information for external decision makers (e.g., investors, analysts, and creditors).

Accounting is an ever-evolving field with growing importance in most businesses and not-for-profit organizations. Today, accountants are business leaders and participate in business decisions and strategy formulation. Accountants must be able to explain and analyze business data, excel in communications, teamwork, leadership, and possess technical and computer-based skills. The accountant in an increasingly global society is rapidly becoming both an information specialist as well as a business advisor. Accountants also act as the moral and ethical compass for business practices.

The undergraduate accounting curriculum at CSU satisfies current educational requirements to sit for the Certified Public Accountant (CPA) exam in the State of Colorado. Effective July 1, 2015, additional coursework is required to become a Certified Public Accountant (CPA) in the State of Colorado. (Requirements to become a CPA are unique to each state and students should be aware of requirements of the state in which they intend to practice.)

The accounting curriculum is designed to meet the needs of those who seek professional education and training to practice as public, private, or governmental accountants, or expect to work in business managerial positions requiring an understanding of fundamental accounting concepts and principles. The curriculum offers considerable flexibility in designing a program of study that will meet a variety of career interests. In addition to the All-University Core Curriculum and the College of Business Core Curriculum, students are particularly encouraged to take additional course work in both finance and computer information systems.

Learning Outcomes

Students will demonstrate:

- Knowledge of the principles of auditing and attestation
- Knowledge of the fundamental concepts of financial accounting and reporting
- Knowledge of the fundamental concepts of managerial accounting and decision making
- Knowledge of taxation (federal, state) and its application to business decisions
- Knowledge of business ethics and principles of social responsibility
- Knowledge of business organization, processes, and understanding of accounting-based systems integration issues

Potential Occupations

Some examples include, but are not limited to: accountant or auditor of publicly or privately held companies, government agencies, or not-for-profit institutions; consultant in firms providing professional management services; public, private, or personal tax specialist; financial analyst; finance and real estate planning; bank administration.

Requirements

Effective Fall 2015

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.

Freshman

<table>
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<th>Code</th>
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<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
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<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<tr>
<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise</td>
<td></td>
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<tr>
<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
<td>3B</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>Arts and Humanities</td>
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<tr>
<td>Biological and Physical Sciences</td>
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**Sophomore**

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<tr>
<td>ACT 210</td>
<td>Introduction to Financial Accounting</td>
<td>3</td>
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<tr>
<td>ACT 211</td>
<td>Accounting Professional Skills</td>
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<tr>
<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
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<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td>3</td>
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<tr>
<td>CIS 200</td>
<td>Business Information Systems</td>
<td>3</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>STAT 204</td>
<td>Statistics for Business Students</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

**Junior**

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 311</td>
<td>Intermediate Accounting I</td>
<td>4</td>
</tr>
<tr>
<td>ACT 312</td>
<td>Intermediate Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACT 321</td>
<td>Cost Management</td>
<td>3</td>
</tr>
<tr>
<td>ACT 350</td>
<td>Accounting Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>FIN 300²</td>
<td>Principles of Finance</td>
<td>4A,4B</td>
</tr>
<tr>
<td>MKT 300²</td>
<td>Marketing</td>
<td>4B</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 330</td>
<td>Introduction to Taxation</td>
<td>3</td>
</tr>
<tr>
<td>ACT 411</td>
<td>Advanced Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACT 441</td>
<td>Auditing Practices</td>
<td>3</td>
</tr>
<tr>
<td>ACT *** Upper-Division Elective (300- or 400- level)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BUS 479</td>
<td>Strategic Management</td>
<td>4A,4C</td>
</tr>
<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Electives³</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

Program Total Credits: 120

---

1. Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.
2. Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the AUCC category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy AUCC categories 4A and 4B.
3. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- or 400-level).
Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

## Major Completion Map

### Distinctive Requirements for Degree Program:

**To Declare this Major:** Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

**To Prepare for First Semester:** The Curriculum for the Business Administration-Accounting Concentration assumes students will be able to successfully complete calculus within the first year.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 100 Introduction to Business</td>
<td>X</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BUS 150 Business Computing Concepts and Applications</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BUS 201 Foundations of Sustainable Enterprise</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

### Semester 2

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 220 Ethics in Contemporary Organizations (GT-AH3)</td>
<td>3B</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 202 Principles of Microeconomics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141 Calculus in Management Sciences (GT-MA1)</td>
<td>X</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CO 150 must be completed by the end of Semester 2.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 210 Introduction to Financial Accounting</td>
<td>X</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CIS 200 Business Information Systems</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ECON 204 Principles of Macroeconomics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

### Semester 4

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 211 Accounting Professional Skills</td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>ACT 220 Introduction to Managerial Accounting</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 260 Social-Ethical-Regulatory Issues in Business</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>STAT 204 Statistics for Business Students</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>ACT 211 must be completed by the end of Semester 4.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td>15</td>
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</tbody>
</table>

### Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACT 311 Intermediate Accounting I</td>
<td>X</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ACT 321 Cost Management</td>
<td>X</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BUS 300 Business Writing and Communication (GT-CO3)</td>
<td>X</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MKT 300 Marketing</td>
<td></td>
<td>X</td>
<td>4B</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td>15</td>
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</table>
Master of Accountancy, Plan C (M.Acc.)
Effective Fall 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 540</td>
<td>Professional Ethics and Responsibilities</td>
<td>3</td>
</tr>
<tr>
<td>ACT 561</td>
<td>Legal and Regulatory Issues in Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACT 570</td>
<td>Government and Nonprofit</td>
<td>3</td>
</tr>
<tr>
<td>ACT 631</td>
<td>Corporate Taxation</td>
<td>3</td>
</tr>
</tbody>
</table>

Auditing Requirement
Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 541</td>
<td>Forensic Accounting and Fraud Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACT 601B</td>
<td>Professional Practice: Auditing</td>
<td></td>
</tr>
<tr>
<td>ACT 641</td>
<td>Contemporary Auditing</td>
<td></td>
</tr>
</tbody>
</table>

Selected Courses
Select a minimum of 15 credits from the following not taken above:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 411</td>
<td>Advanced Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACT 541</td>
<td>Forensic Accounting and Fraud Auditing</td>
<td></td>
</tr>
<tr>
<td>ACT 540</td>
<td>Professional Practice: Auditing</td>
<td></td>
</tr>
<tr>
<td>ACT 601A</td>
<td>Professional Practice: Taxation</td>
<td></td>
</tr>
<tr>
<td>ACT 601B</td>
<td>Professional Practice: Auditing</td>
<td></td>
</tr>
<tr>
<td>ACT 612</td>
<td>Issues in Financial Reporting and Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACT 614</td>
<td>Financial Statement Analysis and Valuation</td>
<td>3</td>
</tr>
<tr>
<td>ACT 622</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ACT 633</td>
<td>Flow-Through Entities</td>
<td>3</td>
</tr>
<tr>
<td>ACT 635</td>
<td>State and Local Taxation</td>
<td>3</td>
</tr>
<tr>
<td>ACT 636</td>
<td>Taxation of Corporations and Shareholders</td>
<td>3</td>
</tr>
<tr>
<td>ACT 639</td>
<td>Special Topics in Taxation</td>
<td>3</td>
</tr>
<tr>
<td>ACT 641</td>
<td>Contemporary Auditing</td>
<td>3</td>
</tr>
<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
<td>3</td>
</tr>
<tr>
<td>CIS 601/ MGT 601</td>
<td>Enterprise Computing and Systems</td>
<td>3</td>
</tr>
<tr>
<td>FIN 475</td>
<td>International Business Finance</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 30

A minimum of 30 credits are required to complete this program.

Master of Accountancy, Plan C, Taxation Specialization
Effective Fall 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 540</td>
<td>Professional Ethics and Responsibilities</td>
<td>3</td>
</tr>
<tr>
<td>ACT 561</td>
<td>Legal and Regulatory Issues in Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACT 570</td>
<td>Government and Nonprofit</td>
<td>3</td>
</tr>
<tr>
<td>ACT 631</td>
<td>Corporate Taxation</td>
<td>3</td>
</tr>
</tbody>
</table>

Auditing Requirement
Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 541</td>
<td>Forensic Accounting and Fraud Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACT 601B</td>
<td>Professional Practice: Auditing</td>
<td></td>
</tr>
<tr>
<td>ACT 641</td>
<td>Contemporary Auditing</td>
<td></td>
</tr>
</tbody>
</table>

Taxation Specialization Courses
Select a minimum of 15 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 601A</td>
<td>Professional Practice: Taxation</td>
<td>3</td>
</tr>
</tbody>
</table>
A minimum of 30 credits are required to complete this program.

**Business Administration**

**Undergraduate**

**Major**
- Major in Business Administration

**Minor**
- Minor in Business Administration

**Graduate**

**Master Programs**
- Master of Business Administration
- Master of Business Administration, Early Career Track Specialization
- Master of Business Administration, Global Social and Sustainable Enterprise Specialization

**Learning Outcomes**

Students will demonstrate:

- The ability to speak the language of business by constructing and analyzing financial and operating reports and using this information to make various business and capital allocation decisions
- An appreciation of the impact of the marketing environment on developing and sustaining a coherent marketing strategy that addresses the needs and wants of a selected target market
- An understanding of leadership principles, effective communication, and ways to collaborate within and across organizations
- An understanding of risk and the time value of money, how to use and value different types of securities, and how to make sound financial management decisions
- An understanding of the all-encompassing role information technology plays in all aspects of a business and the ability to collect, store, analyze, and professionally disseminate data using business technology tools to solve problems and make decisions
- The ability to identify and analyze various ethical dilemmas that occur in organizations, apply sound moral reasoning to address these situations, and defend recommended courses of action

Each student selects one of the following concentrations: Accounting, Finance, Financial Planning, Human Resource Management, Information Systems, Marketing, Organization and Innovation Management, Real Estate, or Supply Chain Management.

**Admission**

Direct entry as a new freshman or transfer to the College of Business is highly selective and only those students meeting academic requirements will be accepted. For details contact the Office of Admissions (http://admissions.colostate.edu).

CSU and the College of Business use holistic review when determining eligibility for admission to the College of Business as a new freshman. An example of a strong candidate for admission to the College of Business is one who is actively involved in their high school and community, has at least a 3.5 GPA with a 1200 or higher on the SAT or a 27 or higher on the ACT. For current admission criteria, contact the CSU Office of Admissions. New freshmen admitted to CSU but not directly to the College of Business will be admitted as "Undeclared Business Interest" and must meet the requirements below. To be eligible for admission to the College, CSU students (including Undeclared Business Interest) must have a 3.000 cumulative GPA on a minimum of 15 graded credits at Colorado State and grades of B- or higher in ECON 202 and MATH 141.

External transfer students who have completed a minimum of 15 graded credits with MATH 141 and ECON 202 with grades of B- or higher and a 3.000 cumulative GPA will be admitted directly to the College.

External transfer students who do not meet the above criteria will be admitted to Undeclared and must complete the requirements stated above.

The College of Business participates in a statewide transfer articulation agreement for the bachelor's degree in Business Administration. That agreement is available online (http://registrar.colostate.edu/classroomscheduling/csuspecific-statewide-agreements) with the Registrar's Office.

**ACT Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 633</td>
<td>Flow-Through Entities</td>
</tr>
<tr>
<td>ACT 635</td>
<td>State and Local Taxation</td>
</tr>
<tr>
<td>ACT 636</td>
<td>Taxation of Corporations and Shareholders</td>
</tr>
<tr>
<td>ACT 639</td>
<td>Special Topics in Taxation</td>
</tr>
</tbody>
</table>

The four-year curriculum leads to a Bachelor of Science degree with a major in Business Administration. The program focuses on global orientation, technology, ethics, business processes, sustainability, and corporate social responsibility.

Lower-division work provides a cultural and analytical foundation. Upper-division work provides specialized work in business disciplines to prepare students to enter their chosen fields in the business world. At the same time, the program develops the attitudes and analytical abilities required for future professional advancement.

The College of Business has a strong reputation among regional, national, and international employers. As a whole, graduates from the College of Business are well-prepared to enter challenging positions. The program centers on an approach which emphasizes: knowledge of concepts, processes, and institutions; understanding of the financial, economic, legal, ethical, social, and organizational influences; information systems; and interpersonal communications. The senior capstone course offers an opportunity for students to apply these skills in an active and engaging learning environment.

All undergraduate business majors must complete the All-University Core Curriculum (AUCC) as part of their graduation requirement. Coordinated with this general education, all business students take business core subjects plus a concentration with its specified course sequence. Fifty percent of the total credits required for the business core and concentration must be completed at CSU.
• An understanding of the dynamics of the global business environment and, when appropriate, the application of elements of a global perspective in making business decisions
• An understanding of the environmental, social, and economic dimensions of sustainability and how to measure, report, and manage sustainability in organizations

Course Requirements
The first two years of study include completion of the All-University Core Curriculum (AUCC) and the lower-division business core courses. Some lower-division specialized course work is required in the Information Systems concentration. Students must have junior or senior status and be admitted into the College of Business in order to take specialized course work in the business concentrations.

Concentrations
• Accounting
• Finance
• Financial Planning
• Human Resource Management

Core Curriculum
The following core curriculum sets the minimum course requirements for all business majors. With recommendations of the student’s advisor, supplementary courses are selected to meet the total minimum of 120 credits required for the Bachelor of Science degree.

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the above concentrations approved for the major in Business Administration.

Additional requirements which all business majors must complete are:
1. one of the approved concentrations;
2. All-University Core Curriculum (AUCC) requirements;
3. Business majors must not utilize the satisfactory/unsatisfactory (S/U) grading option in any Business concentration course or and Business core course (BUS and non-BUS subject codes) except when a course allows S/U grading.

Effective Fall 2015
The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 210</td>
<td>Introduction to Financial Accounting</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise ¹</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3) ¹</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Business Information Systems</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
</tbody>
</table>
Minor in Business Administration

The College of Business offers a minor in business administration to students in other colleges. A minor in business administration will give students a basic understanding of the functional areas of business to add to their specific major area. Students can expect to develop competencies to understand the language of business and use these skills in businesses in a wide variety of majors.

Requirements

Effective Spring 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required for all business courses in the minor to receive the credential.
Select one from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 405A</td>
<td>Contemporary Business Topics: Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>BUS 405B</td>
<td>Contemporary Business Topics: International Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 405C</td>
<td>Contemporary Business Topics: Business Information Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 405D</td>
<td>Contemporary Business Topics: Real Estate</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 3

Program Total Credits: 24

---

**Master of Business Administration Requirements**

**Effective Fall 2015**

**First Year**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BUS 500</td>
<td>Business Systems and Processes</td>
<td>2</td>
</tr>
<tr>
<td>BUS 601</td>
<td>Quantitative Business Analysis</td>
<td>2</td>
</tr>
<tr>
<td>BUS 614</td>
<td>Accounting Concepts</td>
<td>2</td>
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<tr>
<td>BUS 615</td>
<td>Managerial Accounting</td>
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<tr>
<td>BUS 616</td>
<td>Financial Reporting and Analysis</td>
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<tr>
<td>BUS 620</td>
<td>Leadership and Teams</td>
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<tr>
<td>BUS 626</td>
<td>Managing Human Capital</td>
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<tr>
<td>BUS 635</td>
<td>Business Economics for the World Market</td>
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<tr>
<td>BUS 650</td>
<td>Supply Chain Management</td>
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<tr>
<td>BUS 655</td>
<td>Marketing Management</td>
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<td>Directed Electives¹</td>
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Total Credits: 20-26

**Second Year**

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<tr>
<td>BUS 630</td>
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<td>BUS 640</td>
<td>Financial Principles and Practice</td>
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<td>BUS 641</td>
<td>Financial Markets and Investments</td>
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<tr>
<td>BUS 656</td>
<td>Marketing Strategy and Planning</td>
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<tr>
<td>BUS 660</td>
<td>Ethical, Legal, and Regulatory Issues</td>
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<tr>
<td>BUS 662</td>
<td>International Business</td>
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<td>MBA Capstone</td>
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Total Credits: 0-6

Program Total Credits: 16-22

**Directed Electives¹**

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<td>BUS 690A</td>
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</tr>
<tr>
<td>BUS 690B</td>
<td>Contemporary Issues: Grad Tutorials</td>
<td>1-6</td>
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<tr>
<td>BUS 690C</td>
<td>Contemporary Issues: Info Systems</td>
<td>1-6</td>
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<tr>
<td>BUS 690D</td>
<td>Contemporary Issues: Accounting</td>
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<tr>
<td>BUS 690E</td>
<td>Contemporary Issues: Global Enterprise</td>
<td>1-6</td>
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<tr>
<td>BUS 690F</td>
<td>Contemporary Issues: Finance</td>
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<tr>
<td>CIS 570</td>
<td>Business Intelligence</td>
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<td>CIS 575</td>
<td>Applied Data Mining and Analytics in Business</td>
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<tr>
<td>CIS 576</td>
<td>Business Data Visualization</td>
<td>3</td>
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<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
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<td>CIS 655</td>
<td>Business Database Systems</td>
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<td>CIS 670</td>
<td>Advanced IT Project Management</td>
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<tr>
<td>CIS 675</td>
<td>Agile Management and Product Development</td>
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<tr>
<td>CIS 676</td>
<td>Information Technology Management</td>
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<tr>
<td>FIN 602</td>
<td>Options and Futures</td>
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<td>FIN 603</td>
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<td>FIN 604</td>
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<td>FIN 606</td>
<td>Fundamentals of International Finance</td>
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<td>FIN 607</td>
<td>Fundamentals of Bond Markets</td>
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<td>FIN 608</td>
<td>Fundamentals of Firm Valuation</td>
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<td>FIN 609</td>
<td>Fundamentals of Personal Finance</td>
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<tr>
<td>MKT 610</td>
<td>Qualitative Marketing Research Methods</td>
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<td>MKT 611</td>
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<td>MKT 621</td>
<td>Search Engine Marketing and Optimization</td>
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<td>MKT 661</td>
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<td>MKT 662</td>
<td>Strategic Selling for Business Customers</td>
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<td>MKT 667</td>
<td>Services Marketing Management</td>
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<tr>
<td>REL 601</td>
<td>Fundamentals of Real Estate Finance</td>
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</table>

A minimum of 42 credits are required to complete this program.

¹ Select from the Directed Electives list in consultation with advisor. Electives may be used to include a certificate.

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**Master of Business Administration, Early Career Track Specialization**

**Effective Fall 2015**

**First Year**

<table>
<thead>
<tr>
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<tr>
<td>BUS 510</td>
<td>Career Assessment and Development</td>
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**Colorado State University 333**

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<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BUS 614</td>
<td>Accounting Concepts</td>
<td>2</td>
</tr>
<tr>
<td>BUS 620</td>
<td>Leadership and Teams</td>
<td>2</td>
</tr>
<tr>
<td>BUS 636</td>
<td>Economics of Ecosystems and Biodiversity</td>
<td>3</td>
</tr>
<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
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</tr>
<tr>
<td>MGT 667</td>
<td>Global Social Sustainable Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
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</table>

### Spring

- BUS 601: Quantitative Business Analysis
- BUS 615: Managerial Accounting
- BUS 686: Practicum
- BUS 690E: Contemporary Issues: Global Enterprise
- FIN 601: Financial Management and Markets

**Total Credits:** 3
MGT 665  Supply Chain Development and Management  2
MKT 601  Marketing for Social Sustainable Enterprises  3

Total Credits  14

Second Year
Fall
BUS 505  Legal and Ethical Environment of Business  3
BUS 686  Practicum  2
FIN 669  Financing, Evaluating Sustainable Enterprise  3
MGT 612  Managing in a Global Context  3
MGT 668  New Venture Development for Social Enterprise  3

Total Credits  14

Program Total Credits:  41

A minimum of 41 credits are required to complete this program.

Department of Computer Information Systems

Office in Rockwell Hall, Room 150

(970) 491-7929
biz.colostate.edu/cis (http://biz.colostate.edu/cis)

Professor Jon D. Clark, Chair

Undergraduate
Major in Business Administration
• Information Systems Concentration

Certificates
• Information Technology for Business Professionals

Graduate
Master Programs
• Master of Science in Business Administration, Plan A, Computer Information Systems Specialization
• Master of Science in Business Administration, Plan B, Computer Information Systems Specialization

• Master of Computer Information Systems, Plan C (M.C.I.S.)

Certificates
• Business Information Systems
• Business Intelligence
• Information Technology Project Management

Courses

Computer Information Systems (CIS)

CIS 120  Business Programming Fundamentals  Credits: 3 (3-0-0)
Course Description: File and operating systems for business application development. Business program development using a high-level programming language.
Prerequisite: None.
Registration Information: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 200  Business Information Systems  Credits: 3 (3-0-0)
Course Description: Use of information technology (IT) to enable knowledge workers, support business processes, and grow the business.
Prerequisite: BUS 150 or CS 110.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 210  Information Technology in Business  Credits: 3 (3-0-0)
Course Description: Introduction to information systems: the IS profession; hardware, software, and programming; web and database applications; data analysis tools.
Prerequisite: CIS 200, may be taken concurrently.
Registration Information: Credit not allowed for both CIS 210 and CIS 120.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 240  Application Design and Development  Credits: 3 (3-0-0)
Course Description: Software engineering methods including design, implementation, and testing using structured and event-driven techniques, logic, and data structures.
Prerequisite: CIS 210.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 301  End User Computing  Credits: 3 (3-0-0)
Course Description: End user applications in a Graphical User Interface environment including spreadsheet, word processing, and presentation graphics; Internet concepts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIS 320  Project Management for Information Systems  Credits: 3 (3-0-0)  
Course Description: Project management concepts including work breakdown structure, estimating, scheduling, tools, and reports.  
Prerequisite: CIS 210.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 340  Advanced Application Design and Development  Credits: 3 (3-0-0)  
Course Description: Design and construction of business applications using object-orientation and advanced data structures.  
Prerequisite: CIS 240.  
Registration Information: Credit not allowed for both CIS 340 and CIS 220.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 350  Operating Systems and Networks  Credits: 3 (3-0-0)  
Course Description: Multiuser and network operating systems; basic networking concepts including security, transmission, performance, and topologies.  
Prerequisite: CIS 210.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 355  Business Database Systems  Credits: 3 (3-0-0)  
Course Description: Physical and logical design, implementation, and administration of databases.  
Prerequisite: CIS 210.  
Registration Information: Sections may be offered: Online.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 360  Systems Analysis and Design  Credits: 3 (3-0-0)  
Course Description: Traditional and cutting-edge systems analysis and design techniques, with emphasis on object-oriented approaches.  
Prerequisite: CIS 240.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 370  Business Intelligence  Credits: 3 (3-0-0)  
Course Description: Techniques and technologies for deriving business value from the integration, mining, and transformation of data.  
Prerequisite: CIS 200 and MKT 300.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 410  Web Application Development  Credits: 3 (3-0-0)  
Course Description: Web development techniques and strategies including Active Server Pages using VBScript, JavaScript, ColdFusion; security, web design.  
Prerequisite: CIS 355 and CIS 240.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 411  Enterprise Resource Planning Systems  Credits: 3 (3-0-0)  
Course Description: Introduction to enterprise resource planning (ERP) systems concepts, business processes impacted by ERP, systems and software integration.  
Prerequisite: (ACT 220) and (FIN 300 or FIN 305) and (MGT 305 or MGT 320) and (MKT 300 or MKT 305).  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CIS 413  Advanced Networking and Security  Credits: 3 (3-0-0)  
Course Description: Modern communication standards, protocol systems; network security, security policies, attack and protection mechanisms, legal and ethical issues.  
Prerequisite: CIS 240 and CIS 350.  
Registration Information: Sections may be offered: Online.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

CIS 455  Advanced Database Management  Credits: 3 (3-0-0)  
Course Description: Advanced data management topics including performance tuning, concurrency control, security, object-oriented databases, and data warehousing.  
Prerequisite: CIS 355.  
Term Offered: Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CIS 487  Internship  Credits: 3 (0-9-0)  
Course Description: Supervised and planned work experience paralleling concentration in industry.  
Prerequisite: CIS 355 and CIS 360.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CIS 492  Seminar  Credits: 3 (3-0-0)  
Course Description: Current topics in computer-based information systems.  
Prerequisite: None.  
Term Offered: Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CIS 495  Independent Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CIS 496B  Group Study: Small Business Information Systems  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
CIS 496C Group Study: Communications and Distributed Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496D Group Study: Information Systems Performance Measurement Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 496E Group Study: Current Issues in Business Computing Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 570 Business Intelligence Credits: 3 (3-0-0)
Course Description: Harnessing vast data stores to solve problems, enhance decision-making, discover new business opportunities, and to derive additional benefits.
Prerequisite: None.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 575 Applied Data Mining and Analytics in Business Credits: 3 (3-0-0)
Course Description: Data mining is a process of selecting, exploring and modeling large amounts of data to identify patterns and relationships among key variables.
Prerequisite: STAT 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 576 Business Data Visualization Credits: 3 (3-0-0)
Course Description: Methods to solve data visualization problems; critique and evaluate current systems; develop skills in the construction of data visualization.
Prerequisite: CIS 575 or CIS 605.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 600 Information Technology and Project Management Credits: 3 (3-0-0)
Course Description: Strategic role in and management of information technology and software development projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 601 Enterprise Computing and Systems Integration Credits: 3 (3-0-0)
Also Offered As: MGT 601.
Course Description: Integrated extended enterprise planning and execution systems concepts including ERP, CRM, SCM, MRP II, business processes, front/back office systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Credit not allowed for both CIS 601 and MGT 601. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 605 Business Visual Application Development Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application systems including leading-edge visual, E-commerce languages, and tools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 606 Application Software Infrastructure Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application software infrastructure including hardware, operating software, and communications network.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 610 Software Development Methodology Credits: 3 (3-0-0)
Course Description: Methods for all phases of software development focusing upon the establishment of economical software that is reliable and cross platform.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
CIS 611  Object-Oriented Systems  Credits: 3 (3-0-0)
Course Description: Object-oriented and web-based software; object model describing classes; relationships to other objects, attributes, and operations.
Prerequisite: CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 620  IT Communications Infrastructure  Credits: 3 (3-0-0)
Course Description: Technical aspects of information communications, business considerations; wireless technology, architecture, and applications.
Prerequisite: CIS 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 655  Business Database Systems  Credits: 3 (3-0-0)
Course Description: Database analysis, design, administration; data modeling; data sublanguages, query facilities; distributed database systems.
Prerequisite: CIS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 665  E-Business Application Technologies  Credits: 3 (3-0-0)
Course Description: Developing E-business (B2B and B2C) through construction and deployment.
Prerequisite: CIS 605 and CIS 606 and CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 670  Advanced IT Project Management  Credits: 3 (3-0-0)
Course Description: Advanced tools, techniques and skills for advanced risk management, change movement, and performance/control measures in cross-functional projects.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 675  Agile Management and Product Development  Credits: 3 (3-0-0)
Course Description: Business model process optimization; managing rapid product development; incorporating constituent feedback throughout the product life cycle.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 676  Information Technology Management  Credits: 3 (3-0-0)
Course Description: Strategic information technology management of business, technical, system and information services.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program in business. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Certificate in Information Technology for Business Professionals

The Computer Information Systems (CIS) Department offers the Certificate in Information Technology (IT) for Business Professionals, which covers some of the knowledge and skills needed to evaluate, create, deploy, and use IT-based solutions to business problems. It is open to all business students, other than those in the CIS concentration. Students who pursue the Certificate in IT for Business Professionals are typically interested in applying IT skills to their chosen concentration.

Effective Spring 2015
Additional coursework may be required due to prerequisites.
**Graduate Certificate in Business Information Systems**

The Certificate combines business intelligence with applied data mining and analytics to optimize, forecast, detect, predict, classify and discover new ways of using data to make a business more productive and efficient. Completion of the certificate allows students to bring value to companies that have vast quantities of both structured and unstructured data that requires identification, analysis, and transformation into useful data for business optimization and forecasting.

**Effective Fall 2015**

Additional coursework may be required due to prerequisites.

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<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
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<td>Business Intelligence</td>
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<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
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<td>CIS 676</td>
<td>Information Technology Management</td>
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<tr>
<td>Total Credits</td>
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</table>

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

**Graduate Certificate in Information Technology Project Management**

In the information technology areas, project management is found across the private, public, and military sectors. The Certificate includes a deep understanding of the 10 knowledge areas and the 42 grouped processes required by the Project Management Institute®, information technology management, agile project management, and other special topics. Completion of this certificate also prepares the recipient to sit for the PMP® Certification or the CAP-M® Certification exam.

**Effective Fall 2015**

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
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<tr>
<td>CIS 670</td>
<td>Advanced IT Project Management</td>
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</tr>
<tr>
<td>CIS 675</td>
<td>Agile Management and Product Development</td>
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<td>CIS 676</td>
<td>Information Technology Management</td>
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</tbody>
</table>

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

**Major in Business Administration, Information Systems Concentration**

This program is designed to provide students with a comprehensive knowledge of computer information systems along with the skills necessary for effective decision making in a business environment that is diverse, global, and highly competitive. The information systems curriculum provides students with a broad understanding of business and a sound foundation in computer fundamentals and programming, systems analysis and design, networking, database design and implementation, project management, Web applications, and systems integration. Graduates acquire an ability to apply computer technologies to solve business problems, providing a wide variety of career opportunities.

**Learning Outcomes**

Learning outcomes in the CIS program use a tiered model based on a student’s year in school. Learning outcomes build on the previous year’s learning outcomes. Upon graduation all of the learning outcomes will be achieved.

Students will demonstrate:

- The ability to design, write, and test computer programs written in various computer languages by the end of their sophomore year
- The ability to design, implement, and test a database; construct a project plan for technology implementation; and understand, implement, and administer various network protocols and implementations by the end of their junior year
• The ability to integrate and implement previously learned technologies in a Web-based environment by the time they graduate and to help them benefit from networking to enhance employment opportunities.

**Potential Occupations**

Computing-related careers are characterized by a rapid rate of change driven by technological developments. Participating in paid or voluntary work, internships, and cooperative education opportunities is highly recommended, to keep students abreast of new developments.

**Effective Fall 2015**

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Business Information Systems</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
<td>3</td>
</tr>
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<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
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<td></td>
<td>Biological and Physical Sciences</td>
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<td>4</td>
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### Sophomore

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<tbody>
<tr>
<td>ACT 210</td>
<td>Introduction to Financial Accounting</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CIS 210</td>
<td>Information Technology in Business</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CIS 240</td>
<td>Application Design and Development</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>STAT 204</td>
<td>Statistics for Business Students</td>
<td></td>
<td>3</td>
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<tr>
<td></td>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>3</td>
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<td></td>
<td>Electives</td>
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</table>

### Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the concentrations.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
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<td>3</td>
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<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
<td>2</td>
<td>3</td>
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<td>CIS 320</td>
<td>Project Management for Information Systems</td>
<td></td>
<td>3</td>
</tr>
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<td>CIS 350</td>
<td>Operating Systems and Networks</td>
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<td>CIS 355</td>
<td>Business Database Systems</td>
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<td>FIN 300</td>
<td>Principles of Finance</td>
<td>4A,4B</td>
<td>3</td>
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<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
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<td></td>
<td>Electives</td>
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### Senior

<table>
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<tbody>
<tr>
<td>BUS 479</td>
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Select two courses from the following:\(^3\)

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<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CIS 340</td>
<td>Advanced Application Design and Development</td>
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<td>CIS 410</td>
<td>Web Application Development</td>
<td>3</td>
</tr>
<tr>
<td>CIS 411</td>
<td>Enterprise Resource Planning Systems</td>
<td>3</td>
</tr>
<tr>
<td>CIS 413</td>
<td>Advanced Networking and Security</td>
<td>3</td>
</tr>
<tr>
<td>CIS 360</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
<td>3</td>
</tr>
<tr>
<td>MKT 300</td>
<td>Marketing</td>
<td>4</td>
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<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

Total Credits: 33

Program Total Credits: 120

---

1. Students enrolled in the Business Administration major prior to Fall semester, 2013, are not required to take BUS 201 and BUS 220. Students who don’t take BUS 220 will need to select another All-University Core Curriculum (AUCC) category 3B course.

2. Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.

3. One of the courses selected must be either CIS 340 or CIS 410.

4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

To prepare for first semester: The curriculum in Business Administration - Information Systems concentration assumes students will be able to successfully complete calculus within their first year.

---

**Freshman**

**Semester 1**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
<td>X</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<td>X</td>
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<td>3</td>
</tr>
<tr>
<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise</td>
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<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>1A</td>
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<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>Elective</td>
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Total Credits: 15

**Semester 2**

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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 200</td>
<td>Business Information Systems</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>X</td>
<td>1B</td>
<td></td>
<td>3</td>
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<tr>
<td>Arts and Humanities</td>
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<td>Elective</td>
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</table>
| CO 150 must be completed by the end of Semester 2. | | | | | X

Total Credits: 15

**Sophomore**

**Semester 3**

<table>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACT 210</td>
<td>Introduction to Financial Accounting</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>CIS 210</td>
<td>Information Technology in Business</td>
<td>X</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<td>Semester 4</td>
<td>Critical</td>
<td>Recommended</td>
<td>AUCC</td>
<td>Credits</td>
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<td>ACT 220</td>
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<td>BUS 220</td>
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<td>CIS 240</td>
<td></td>
<td>X</td>
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<tr>
<td>STAT 204</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
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</table>

| Total Credits | 15 |

<table>
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<tr>
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<th>Semester 5</th>
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<th>AUCC</th>
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<tbody>
<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td></td>
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<td>3</td>
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<tr>
<td>CIS 320</td>
<td>Project Management for Information Systems</td>
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<tr>
<td>CIS 350</td>
<td>Operating Systems and Networks</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
<td>X</td>
<td>2</td>
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<td>3</td>
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<td>Elective</td>
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| Total Credits | 15 |

<table>
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<tr>
<th>Senior</th>
<th>Semester 7</th>
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<th>Recommended</th>
<th>AUCC</th>
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<tbody>
<tr>
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<td>Marketing</td>
<td>X</td>
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<td>3</td>
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<td>MGT 301</td>
<td>Supply Chain Management</td>
<td></td>
<td>X</td>
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<td>3</td>
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<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
<td></td>
<td>X</td>
<td></td>
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<td>Select one course from the following:</td>
<td></td>
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<tr>
<td>CIS 340</td>
<td>Advanced Application Design and Development</td>
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<td></td>
</tr>
<tr>
<td>CIS 410</td>
<td>Web Application Development</td>
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<td>Select one additional course from the following:</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 410</td>
<td>Web Application Development</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 411</td>
<td>Enterprise Resource Planning Systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 413</td>
<td>Advanced Networking and Security</td>
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| Total Credits | 15 |

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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>BUS 479</td>
<td>Strategic Management</td>
<td>X</td>
<td></td>
<td>4A,4C</td>
</tr>
<tr>
<td>CIS 360</td>
<td>Systems Analysis and Design</td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
<td></td>
<td>3</td>
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<tr>
<td>Electives</td>
<td></td>
<td>X</td>
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</tr>
</tbody>
</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

| Total Credits | 18 |

Program Total Credits: 120
### Master of Computer Information Systems, Plan C (M.C.I.S.)

**Effective Spring 2014**

<table>
<thead>
<tr>
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<tbody>
<tr>
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<td>CIS 601/MGT 601</td>
<td>Enterprise Computing and Systems Integration</td>
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<td>CIS 605</td>
<td>Business Visual Application Development</td>
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<td>CIS 606</td>
<td>Application Software Infrastructure</td>
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<td>CIS 610</td>
<td>Software Development Methodology</td>
<td>3</td>
</tr>
<tr>
<td>CIS 611</td>
<td>Object-Oriented Systems</td>
<td>3</td>
</tr>
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<td>CIS 620</td>
<td>IT Communications Infrastructure</td>
<td>3</td>
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<td>CIS 655</td>
<td>Business Database Systems</td>
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<tr>
<td>CIS 665</td>
<td>E-Business Application Technologies</td>
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**Selected Courses**

Select a minimum of two courses from the following:

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<thead>
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<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 690C</td>
<td>Contemporary Issues: Info Systems</td>
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</tr>
<tr>
<td>CIS 570</td>
<td>Business Intelligence</td>
<td></td>
</tr>
<tr>
<td>CIS 575</td>
<td>Applied Data Mining and Analytics in Business</td>
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</tr>
<tr>
<td>CIS 670</td>
<td>Advanced IT Project Management</td>
<td></td>
</tr>
<tr>
<td>CIS 695</td>
<td>Independent Study</td>
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</table>

**Total Credits** 33

A minimum of 33 credits are required to complete this program.

### Master of Science in Business Administration, Plan B, Computer Information Systems Specialization

**Effective Fall 2013**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>CIS 600</td>
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<tr>
<td>CIS 601/MGT 601</td>
<td>Enterprise Computing and Systems Integration</td>
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</tr>
<tr>
<td>CIS 605</td>
<td>Business Visual Application Development</td>
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</tr>
<tr>
<td>CIS 606</td>
<td>Application Software Infrastructure</td>
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</tr>
<tr>
<td>CIS 610</td>
<td>Software Development Methodology</td>
<td>3</td>
</tr>
<tr>
<td>CIS 611</td>
<td>Object-Oriented Systems</td>
<td>3</td>
</tr>
<tr>
<td>CIS 620</td>
<td>IT Communications Infrastructure</td>
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</tr>
<tr>
<td>CIS 655</td>
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<tr>
<td>CIS 665</td>
<td>E-Business Application Technologies</td>
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</table>

Select a minimum of 6 credits from the following:

<table>
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<th>Code</th>
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<th>Credits</th>
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</thead>
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<tr>
<td>BUS 690C</td>
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<td>6</td>
</tr>
<tr>
<td>CIS 570</td>
<td>Business Intelligence</td>
<td></td>
</tr>
<tr>
<td>CIS 575</td>
<td>Applied Data Mining and Analytics in Business</td>
<td></td>
</tr>
<tr>
<td>CIS 670</td>
<td>Advanced IT Project Management</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 33

### Department of Finance and Real Estate

Office in Rockwell Hall, Room 305  
(970) 491-5062  
biz.colostate.edu/financeRealEstate (http://biz.colostate.edu/financeRealEstate)

Professor Harry J Turtle, Chair

**Undergraduate**

**Major in Business Administration**

- Finance Concentration
- Financial Planning Concentration
- Real Estate Concentration

**Minors**

- Real Estate
Certificate
- Real Estate Practices

Graduate Master Programs
- Master of Finance, Plan C
- Master of Science in Business Administration - Financial Risk Management

Certificate
- Applied Finance

Courses
Subjects in this department include: Finance and Real Estate

Finance (FIN)

FIN 300 Principles of Finance Credits: 3 (3-0-0)
Course Description: Overview of financial markets and institutions, analysis of securities and investigation of financial management techniques.
Prerequisite: (ACT 205 or ACT 210) and (AREC 202 or ECON 202) and (ECON 204) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both FIN 300 and FIN 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 305 Fundamentals of Finance Credits: 3 (3-0-0)
Course Description: Role of finance in management of the firm; role, structure of financial markets and institutions, valuation of basic securities.
Prerequisite: (ACT 205 or ACT 210) and (ECON 204).
Registration Information: Credit not allowed for both FIN 305 and FIN 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 310 Financial Markets and Institutions Credits: 3 (3-0-0)
Course Description: Analysis of the functions and operations of financial markets and the primary and secondary securities created in those markets.
Prerequisite: ECON 204.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 311 Debt Securities Analysis Credits: 3 (3-0-0)
Course Description: Analysis of corporate, government, and mortgage-based debt securities. Emphasis on securitization of asset-backed obligations.
Prerequisite: (FIN 300) and (FIN 310 or ECON 315) and (FIN 355).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 320 Introduction to Financial Planning Credits: 3 (3-0-0)
Course Description: Personal financial planning including budgeting, tax planning, credit management, investing, retirement, and estate planning.
Prerequisite: ACT 210 and ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 342 Risk Management and Insurance Credits: 3 (3-0-0)
Course Description: Management of insurable risks for the individual and business firm.
Prerequisite: FIN 300 or FIN 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 355 Principles of Investments Credits: 3 (3-0-0)
Course Description: Modern investment theory with applications in the debt and equity markets, with introduction to portfolio management.
Prerequisite: FIN 300 and FIN 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 370 Financial Management-Theory and Application Credits: 3 (3-0-0)
Course Description: Theory and application of financial management to business firms; case problems used for illustration.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 430 Introduction to Financial Modeling Credits: 3 (3-0-0)
Course Description: Financial modeling that integrates conceptual material with spreadsheet-based numerical solutions and simulation techniques.
Prerequisite: FIN 300 and FIN 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 440 Estate Planning Credits: 3 (3-0-0)
Course Description: Methods for conservation and transfer of wealth, considering aspects of tax, trusts, wills, probate, advanced directives, and charitable giving.
Prerequisite: ACT 330 and FIN 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 442 Employee Benefits and Retirement Planning Credits: 3 (3-0-0)
Course Description: Design, financing, accounting, and taxation for employee benefit and retirement plans.
Prerequisite: FIN 342.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 445  Financial Plan Development  Credits: 3 (3-0-0)
Course Description: Analyze client finances and economic conditions, develop and communicate comprehensive financial plan using financial planning professional standards.
Prerequisite: ACT 330 and FIN 320 and FIN 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 455  Advanced Portfolio Management  Credits: 3 (3-0-0)
Course Description: Advanced hedging and portfolio management theory and techniques.
Prerequisite: FIN 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 470  Financial Risk Management  Credits: 3 (3-0-0)
Course Description: Futures, options, asset-backed securities and other derivatives as they are used in financial risk management.
Prerequisite: FIN 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 471  Enterprise Valuation  Credits: 3 (3-0-0)
Course Description: Analytical framework for measuring, managing, and applying principles and tools to value enterprises.
Prerequisite: FIN 355 and FIN 370.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 475  International Business Finance  Credits: 3 (3-0-0)
Course Description: International financial management emphasizing markets, instruments, hedging techniques, and operating strategies.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 487  Internship  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FIN 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FIN 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FIN 498  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FIN 524  Financial Statistics  Credits: 3 (3-0-0)
Also Offered As: STAT 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: MATH 345; STAT 420, or Admission to MSBA program with Financial Risk Management specialization. Credit not allowed for both FIN 524 and STAT 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 600  Financial Management-Theory and Case Studies  Credits: 3 (3-0-0)
Course Description: Financial problems for various types of business organizations.
Prerequisite: FIN 300 or FIN 305.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 601  Financial Management and Markets  Credits: 3 (3-0-0)
Course Description: Integrated coverage of financial management, investments, and markets and institutions from the public, private, and nonprofit perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 602  Options and Futures  Credit: 1 (1-0-0)
Course Description: Advanced analysis and pricing of derivative securities, such as futures, forwards and options.
Prerequisite: BUS 641.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 603  Corporate Risk Management  Credit: 1 (1-0-0)
Course Description: Survey of topics related to corporate risk management including the role and function of insurance and risk management for business enterprises.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 604  Employee Benefits  Credit: 1 (1-0-0)
Course Description: Design and financing of employee benefits including health plans, disability, life insurance, long-term care, and retirement plans.
Prerequisite: FIN 603.
Restriction: Must not be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 605  Employee Benefits  Credits: 3 (3-0-0)
Course Description: Corporate valuation methodologies including dividend discount model, relative valuation using market multiples, free cash flows and options analysis.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 606  Fundamentals of International Finance  Credit: 1 (1-0-0)
Course Description: Fundamental principles of international finance and how they relate to business operations and strategies.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 607  Fundamentals of Bond Markets  Credit: 1 (1-0-0)
Course Description: Properties of bonds and bond markets, pricing bonds by arbitrage, risk characteristics of bonds.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 608  Fundamentals of Firm Valuation  Credit: 1 (1-0-0)
Course Description: Identifies key value drivers for a business and how these can be identified utilizing currently available financial information.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 609  Fundamentals of Personal Finance  Credit: 1 (1-0-0)
Course Description: Personal financial planning focusing on TVM, personal financial statements, retirement plans, government sponsored benefits and education planning.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 610  Debt Securities Analysis  Credits: 3 (3-0-0)
Course Description: Valuation of corporate, government, and mortgage-backed debt securities and strategies for management of debt security portfolios.
Prerequisite: FIN 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 625  Quantitative Methods in Finance  Credits: 3 (3-0-0)
Course Description: Review and application of mathematical and analytical techniques used in solving financial problems.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 655  Investments  Credits: 3 (3-0-0)
Course Description: Investment analysis and decision making emphasizing equity securities and portfolio management.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 661 Advanced Portfolio Management Credits: 3 (3-0-0)
Course Description: Portfolio management, asset allocation, and asset selection theory and techniques.
Prerequisite: FIN 605 and FIN 655.
Registration Information: Written consent of advisor.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 665 Financial Engineering Credits: 3 (3-0-0)
Course Description: Using futures, options, swaps, and securitized transactions in financial management.
Prerequisite: FIN 610 or FIN 655 or FIN 675.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 669 Financing, Evaluating Sustainable Enterprise Credits: 3 (3-0-0)
Course Description: Theoretical and applied approaches to the funding and evaluation of enterprises.
Prerequisite: (BUS 601) and (FIN 601).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 670 Risk Management Theory and Application Credits: 3 (3-0-0)
Course Description: Fundamentals of financial risk management using quantitative techniques and models to identify, measure, and manage corporate risk.
Prerequisite: (FIN 524 or STAT 524) and (FIN 655).
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 675 International Finance Credits: 3 (3-0-0)
Course Description: Analysis of the foreign exchange market and international financial markets.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 678 Financial Decisions-Theory and Practice Credits: 3 (3-0-0)
Course Description: Analysis of theory of corporate finance with emphasis on underlying assumptions and implications for financial decisions.
Prerequisite: FIN 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 699 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REAL ESTATE (REL)
REL 360 Real Estate Principles Credits: 3 (3-0-0)
Course Description: Broad survey of real estate emphasizing land use, urban structure and growth, market analysis, real estate finance and valuation, and property rights.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

REL 367 Real Estate Law Credits: 3 (3-0-0)
Course Description: Legal regulations applicable to real property ownership and transfer, to real estate agents, and to use of real property.
Prerequisite: BUS 205 or BUS 260 or HDFS 403.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 430 Real Estate Analysis and Marketing Credits: 3 (3-0-0)
Course Description: Analysis of real estate markets, including development feasibility and managing risk, and their relation to urban economic trends.
Prerequisite: REL 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
REL 435 Real Estate Marketing and Brokerage Credits: 2 (2-0-0)
Course Description: Practitioner focus including legal forms, valuation, sales techniques, escrow, fiduciary requirements, start-to-finish real estate project.
Prerequisite: REL 360.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

REL 440 Real Estate Development Credits: 3 (3-0-0)
Course Description: Development process including urban dynamics, architecture, construction, law, public approvals, financing, marketing, and property management.
Prerequisite: FIN 300 and REL 360 and REL 460.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 452 Real Estate Appraisal Principles Credits: 2 (2-0-0)
Also Offered As: AREC 452.
Course Description: Theoretical principles that underlie real estate appraisal methods.
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).
Registration Information: Credit not allowed for both REL 452 and AREC 452. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 453 Real Estate Appraisal Practices Credits: 2 (2-0-0)
Also Offered As: AREC 453.
Course Description: Procedures and practices used in real estate appraisal.
Prerequisite: AREC 452 or REL 452, may be taken concurrently.
Restriction: 
Registration Information: Credit not allowed for both REL 453 and AREC 453. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

REL 455 Residential Real Estate Finance Credits: 2 (2-0-0)
Course Description: Residential mortgage origination, mortgage loan amortization; secondary markets, residential investment.
Prerequisite: REL 360.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

REL 460 Real Estate Finance and Investment Credits: 3 (3-0-0)
Course Description: Financing of real estate resources: real estate financial markets, policies; use of leverage and real estate investment analysis in real estate investment programs.
Prerequisite: (FIN 300 or FIN 305) and (REL 360).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

REL 467 Real Estate Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REL 495 Real Estate Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REL 496 Real Estate Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

REL 601 Fundamentals of Real Estate Finance Credit: 1 (1-0-0)
Course Description: Valuation-oriented study of real estate concepts and principles, including legal, regulatory, finance, market and financial analysis.
Prerequisite: BUS 601.
Restriction: Must be a Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Certificate in Real Estate Practices

The College of Business at CSU offers a Certificate Program in Real Estate Practices that seeks to offer knowledge in real estate principles, appraisal practices, and real estate finance. This certificate program provides a well-balanced background in modern real estate practices, and provides students with a valuable compliment to many fields of study.

Additional coursework may be required due to prerequisites.

Effective Fall 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AREC 452/REL 452</td>
<td>Real Estate Appraisal Principles</td>
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<tr>
<td>AREC 453/REL 453</td>
<td>Real Estate Appraisal Practices</td>
<td>2</td>
</tr>
<tr>
<td>REL 360</td>
<td>Real Estate Principles</td>
<td>3</td>
</tr>
<tr>
<td>REL 455</td>
<td>Residential Real Estate Finance</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Credits 9

Graduate Certificate in Applied Finance

Students will obtain a solid background in business finance and investments by completing graduate-level introductory finance courses and more advanced electives in specialized areas of finance. Students
can focus in the investments area by taking electives that cover bonds, futures, and options, and real estate. Students interested in corporate financial management can focus their studies on corporate risk management, employee benefits, and international finance.

**Effective Fall 2015**

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>BUS 601</td>
<td>Quantitative Business Analysis</td>
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<tr>
<td>BUS 640</td>
<td>Financial Principles and Practice</td>
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<tr>
<td>BUS 641</td>
<td>Financial Markets and Investments</td>
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<td>Select 5 credits from the following:</td>
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<tr>
<td>FIN 602</td>
<td>Options and Futures</td>
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<tr>
<td>FIN 603</td>
<td>Corporate Risk Management</td>
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<td>FIN 604</td>
<td>Employee Benefits</td>
<td></td>
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<tr>
<td>FIN 606</td>
<td>Fundamentals of International Finance</td>
<td></td>
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<tr>
<td>FIN 607</td>
<td>Fundamentals of Bond Markets</td>
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<td>FIN 608</td>
<td>Fundamentals of Firm Valuation</td>
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<tr>
<td>FIN 609</td>
<td>Fundamentals of Personal Finance</td>
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<tr>
<td>REL 601</td>
<td>Fundamentals of Real Estate Finance</td>
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<tr>
<td><strong>Total Credits</strong></td>
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</table>

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

**Major in Business Administration, Finance Concentration**

This program is designed to prepare undergraduate students to enter the finance profession with comprehensive knowledge and real world skills in their area of emphasis. The field of finance is complex, quantitative, and constantly evolving. The program focuses on providing state-of-the-art tools, techniques, and computer applications.

**Learning Outcomes**

Students will demonstrate:

- The ability to solve time value of money problems
- The ability to value securities, measure and manage risk
- The ability to analyze the financial health of companies
- The ability to incorporate global risk in financial decision-making

In addition to the core areas of asset valuation, investments, and global finance, the concentration allows students to select from three options for more in-depth study.

The **Corporate Finance option** prepares students for positions in both financial and non-financial business enterprises in which they will need to make and defend strategic financial decisions in capital budgeting, planning, control, and policy.

The **Investment Analysis option** focuses on the theoretical and practical aspects of investment valuation, selection, and portfolio management, for both individual and institutional investors.

The **Real Estate Finance option** prepares students for careers in commercial or residential real estate and related industries, while also providing strong foundations in financial analysis.

**Potential Occupations**

Finance students are prepared for a number of different careers in business. Internships and volunteer experiences enhance skills and marketability.

Examples of fields in which graduates can find finance-related occupations include, but are not limited to: commercial, mortgage, and investment banking; corporate finance; investments; portfolio management; financial analysis; securities analysis; loan analysis; insurance; stock brokerage; government banking and securities regulation; government finance; teaching and research.

**Requirements**

In order to complete the Finance Concentration, the Business Administration core courses and the Finance Concentration core courses must be completed. Students must also select one of the following options as well: Corporate Finance, Investment Analysis, or Real Estate Finance.

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.

**Freshman**

<table>
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<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
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<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<tr>
<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise</td>
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<tr>
<td>CIS 200</td>
<td>Business Information Systems</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>3</td>
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<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>Biological and Physical Sciences</td>
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<td>Global and Cultural Awareness</td>
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## Elective

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<td></td>
<td>Total Credits</td>
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### Sophomore

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ACT 210</td>
<td>Introduction to Financial Accounting</td>
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<tr>
<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 220(^1)</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
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<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
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<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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| Total Credits | 30 |

### Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the concentrations.

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
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<td>FIN 300(^2)</td>
<td>Principles of Finance</td>
<td>4A,4B</td>
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<td>FIN 310</td>
<td>Financial Markets and Institutions</td>
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<tr>
<td>FIN 355</td>
<td>Principles of Investments</td>
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<tr>
<td>MKT 300(^2)</td>
<td>Marketing</td>
<td>4B</td>
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<td>Arts and Humanities</td>
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<tr>
<td>Option courses (see requirements below)</td>
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| Total Credits | 30 |

### Senior

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<td>Contemporary Management Principles/Practices</td>
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<td>Electives(^3)</td>
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| Total Credits | 30 |

Program Total Credits: 120

1. Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.
2. Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.
3. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

## Corporate Finance Option

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>FIN 370</td>
<td>Financial Management-Theory and Application</td>
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SENIOR
FIN 470  Financial Risk Management  3
FIN 471  Enterprise Valuation  3
FIN, REL, or ACT Elective  6

Investment Analysis Option

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<tr>
<th>Code</th>
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<tr>
<td>FIN 311</td>
<td>Debt Securities Analysis</td>
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<td>FIN 455</td>
<td>Advanced Portfolio Management</td>
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<td>FIN 470</td>
<td>Financial Risk Management</td>
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Real Estate Finance Option

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<td>REL 360</td>
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<td>Upper-Division ACT, FIN, or REL</td>
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Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in department for more information.

To prepare for first semester: The curriculum for the Business Administration - Finance concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<td>BUS 201</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
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<td>Biological and Physical Sciences</td>
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<td>Principles of Microeconomics (GT-SS1)</td>
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<tr>
<td>ECON 204</td>
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<td>Historical Perspectives</td>
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Program Total Credits: **60**

### Corporate Finance Option

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<td>FIN 370</td>
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<td>MKT 300</td>
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Program Total Credits: **60**
### Investment Analysis Option

**Junior**

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**Senior**

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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Program Total Credits:** 60

### Real Estate Finance Option

**Junior**

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<td></td>
</tr>
<tr>
<td>FIN, REL, or ACT Elective</td>
<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>
Major in Business Administration, Real Estate Concentration

This program is designed to prepare undergraduate students for careers as professionals in real estate and related industries. Real estate is the largest industry in the world representing nearly 50% of the world’s wealth. The real estate profession offers one of the most diverse career selections in the business world today. It is a multi-disciplinary profession that coordinates architecture, construction, law, finance, marketing, property management, and urban dynamics. Real estate professionals help find, provide, and manage space for people to work, sleep, shop, eat, and play. Those who choose careers in real estate are typically goal-oriented, persevering, self-motivated, and possess an entrepreneurial spirit. Furthermore, they must be creative and able to research, analyze, negotiate, and pay attention to details. No two projects or investments are ever the same. Rewards of a real estate career include potential for high earnings, status in the community, independence, flexibility, and an opportunity to help people.

**Learning Outcomes**

Students will demonstrate:

- The ability to evaluate physical real estate (land and building analysis)
- The ability to perform financial real estate analysis (including time value of money)
- The ability to assess and manage risk
- The ability to conduct market analysis and identify opportunities
- An understanding of property and portfolio management

**Potential Occupations**

Real estate graduates find professional employment in many fields. Students interested in commercial real estate may find employment in property and land development, property acquisition, property management, commercial mortgage lending, commercial real estate brokerage, asset management, government housing, commercial construction, or Real Estate Investment Trust (REIT) analysis, investment, or management. Students interested in real estate finance may find employment in commercial real estate investment banking, residential real estate lending for both development and loan underwriting, financial analysis, real estate securities analysis, insurance underwriting, commercial real estate brokerage, government housing finance and investment, or construction lending and research. Students interested in residential real estate may find employment in residential brokerage, residential marketing, residential appraisal, residential finance, residential home inspection services, home construction consulting, or residential development.

**Requirements**

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.
### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 210</td>
<td>Introduction to Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
<td>3B</td>
</tr>
<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td>3</td>
</tr>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
</tr>
<tr>
<td>STAT 204</td>
<td>Statistics for Business Students</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td>29</td>
</tr>
</tbody>
</table>

### Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the concentrations.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 300</td>
<td>Principles of Finance</td>
<td>4A,4B</td>
</tr>
<tr>
<td>FIN 310</td>
<td>Financial Markets and Institutions</td>
<td>3</td>
</tr>
<tr>
<td>FIN 355</td>
<td>Principles of Investments</td>
<td>3</td>
</tr>
<tr>
<td>MKT 300</td>
<td>Marketing</td>
<td>4B</td>
</tr>
<tr>
<td>REL 360</td>
<td>Real Estate Principles</td>
<td>3</td>
</tr>
<tr>
<td>REL 367</td>
<td>Real Estate Law</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
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<td><strong>Total Credits</strong></td>
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</table>

### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREC 452/REL 452</td>
<td>Real Estate Appraisal Principles</td>
<td>2</td>
</tr>
<tr>
<td>AREC 453/REL 453</td>
<td>Real Estate Appraisal Practices</td>
<td>2</td>
</tr>
<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>BUS 479</td>
<td>Strategic Management</td>
<td>4A,4C</td>
</tr>
<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
<td>3</td>
</tr>
<tr>
<td>REL 430</td>
<td>Real Estate Analysis and Marketing</td>
<td>3</td>
</tr>
<tr>
<td>REL 455 or 460</td>
<td>Residential Real Estate Finance</td>
<td>2-3</td>
</tr>
<tr>
<td>REL 487</td>
<td>Real Estate Internship</td>
<td>1-3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Electives</td>
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<td>3-6</td>
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<td><strong>Total Credits</strong></td>
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</tr>
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</table>

Program Total Credits: 120

---

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 or BUS 220.

2 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.
Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**To Declare this Major:** Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.

**To prepare for first semester:** The curriculum for the Business Administration - Real Estate concentration assumes students will be able to successfully complete calculus within their first year.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>BUS 100</td>
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<tr>
<td>BUS 150</td>
<td></td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 201</td>
<td></td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>CIS 200</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 202</td>
<td></td>
<td>X</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141</td>
<td></td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td><strong>5</strong></td>
</tr>
<tr>
<td>BUS 100, BUS 150, and CO 150 must be completed by the end of Semester 2.</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
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</table>

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACT 210</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 220</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>ECON 204</td>
<td></td>
<td>X</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
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<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CIS 200 must be completed by the end of Semester 3.</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
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<table>
<thead>
<tr>
<th>Semester 4</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACT 220</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 260</td>
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<tr>
<td>STAT 204</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 204 must be completed by the end of Semester 4.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
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### Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 300</td>
<td></td>
<td>X</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>FIN 310</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MKT 300</td>
<td></td>
<td></td>
<td>4B</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
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<td><strong>4</strong></td>
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</table>


BUS 260 and BUS 300 must be completed by the end of Semester 5.

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FIN 355</td>
<td>Principles of Investments</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>REL 360</td>
<td>Real Estate Principles</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>REL 367</td>
<td>Real Estate Law</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td></td>
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<td>13</td>
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<table>
<thead>
<tr>
<th>Senior</th>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>REL 430</td>
<td>Real Estate Analysis and Marketing</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Total Credits</td>
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<td>15</td>
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<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AREC 452/REL 452</td>
<td>Real Estate Appraisal Principles</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AREC 453/REL 453</td>
<td>Real Estate Appraisal Practices</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
<td></td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td>BUS 479</td>
<td>Strategic Management</td>
<td></td>
<td>X</td>
<td>4A,4C</td>
</tr>
<tr>
<td>REL 487</td>
<td>Real Estate Internship</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>X</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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<td>Total Credits</td>
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</table>

**Master of Science in Business Administration, Financial Risk Management Specialization**

**Effective Spring 2012**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Total Credits</th>
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<tbody>
<tr>
<td>FIN 524/STAT 524</td>
<td>Financial Statistics</td>
</tr>
<tr>
<td>FIN 605</td>
<td>Enterprise Valuation</td>
</tr>
<tr>
<td>FIN 625</td>
<td>Quantitative Methods in Finance</td>
</tr>
<tr>
<td>FIN 655</td>
<td>Investments</td>
</tr>
<tr>
<td>FIN 675</td>
<td>International Finance</td>
</tr>
<tr>
<td>FIN 696</td>
<td>Group Study</td>
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<td>Total Credits</td>
<td>16</td>
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<table>
<thead>
<tr>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>FIN 610</td>
<td>Debt Securities Analysis</td>
</tr>
<tr>
<td>FIN 630</td>
<td>Financial Modeling</td>
</tr>
<tr>
<td>FIN 665</td>
<td>Financial Engineering</td>
</tr>
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</table>

**Master of Science in Business Administration, Financial Risk Management Specialization**

<table>
<thead>
<tr>
<th>Spring</th>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 670</td>
<td>Risk Management Theory and Application</td>
</tr>
<tr>
<td>FIN 696</td>
<td>Group Study</td>
</tr>
<tr>
<td>FIN 698</td>
<td>Research</td>
</tr>
<tr>
<td>Total Credits</td>
<td>16</td>
</tr>
</tbody>
</table>

Program Total Credits: 120

A minimum of 32 credits are required to complete this program.

**Minor in Real Estate**

The College of Business offers a minor in Real Estate to majors in other colleges. The minor explores the fundamentals of real estate. Consisting of 21 credits, it covers an introduction to the field of real estate, real estate law, selling, appraisal, and principles of real estate finance.
Requirements
Effective Spring 2015
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Lower Division</strong></td>
<td></td>
</tr>
<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3</td>
</tr>
<tr>
<td>or ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td></td>
</tr>
<tr>
<td>BUS 205</td>
<td>Legal and Ethical Issues in Business</td>
<td>3</td>
</tr>
<tr>
<td>or BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td></td>
</tr>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Upper Division</strong></td>
<td></td>
</tr>
<tr>
<td>AREC 452/REL 452</td>
<td>Real Estate Appraisal Principles</td>
<td>2</td>
</tr>
<tr>
<td>REL 360</td>
<td>Real Estate Principles</td>
<td>3</td>
</tr>
<tr>
<td>REL 367</td>
<td>Real Estate Law</td>
<td>3</td>
</tr>
<tr>
<td>REL 435</td>
<td>Real Estate Marketing and Brokerage</td>
<td>2</td>
</tr>
<tr>
<td>REL 455</td>
<td>Residential Real Estate Finance</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

Department of Management

Office in Rockwell Hall, Room 213
(970) 491-5323
biz.colostate.edu/management (http://biz.colostate.edu/management)
Professor Lynn Shore, Chair

Undergraduate
Major in Business Administration
- Human Resource Management Concentration
- Organization and Innovation Management Concentration
- Supply Chain Management Concentration

Certificates
- Certificate in Entrepreneurship
- Certificate in Leadership in Organizations
- Certificate in Managing Human Resources
- Certificate in Operations, Logistics and Supply Management

Graduate
Master Program
- Master of Management Practice, Plan C (M.M.P.)

Courses
Subjects in this department include: Management (MGT) and Management Science (QNT).

Management (MGT)

MGT 301 Supply Chain Management Credits: 3 (3-0-0)
Course Description: Concept of value-driven supply chains; design and management of effective supply chains; emphasis on current practice and recent trends.
Prerequisite: None.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 305 Fundamentals of Management Credits: 3 (3-0-0)
Course Description: Managerial process of planning, directing, and controlling inputs of an organization. Analysis, decision making, and survey of research literature.
Prerequisite: None.
Registration Information: Credit not allowed for both MGT 305 and MGT 320. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 310 Human Resource Management Credits: 3 (3-0-0)
Course Description: Principles and practices of employee management including hiring, development, compensation, and employee relations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 320 Contemporary Management Principles/Practices Credits: 3 (3-0-0)
Course Description: Principles of management in combination with practices of the new economy to achieve managerial goals.
Prerequisite: (BUS 300) and (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both MGT 320 and MGT 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 325 Leadership Communication Credits: 3 (3-0-0)
Course Description: Interpersonal communication for leaders and managers in organizational settings.
Prerequisite: BUS 200.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MGT 330 Corporate Innovation and Entrepreneurship Credits: 3 (3-0-0)
Course Description: Process of creating new ventures and generating innovations within existing organizations.
Prerequisite: ACT 210.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Business Administration, Mechanical Engineering, Agriculture Business, Apparel and Merchandising, Design and Merchandising, Apparel Design and Production, Biomedical Engineering, Computer Science majors; declared LEAP minors or LEAP graduate students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 340 Fundamentals of Entrepreneurship Credits: 3 (3-0-0)
Course Description: Concepts of entrepreneurship and role of entrepreneurs in the economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 350 Employment Relations: The Legal Environment Credits: 3 (3-0-0)
Course Description: Legal principle and policy issues arising from the employment relationship.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 360 Social and Sustainable Venturing Credits: 3 (3-0-0)
Course Description: Entrepreneurship and economic opportunities in the transition to a socially and ecologically sustainable global economy.
Prerequisite: None.
Restriction: Must not be a: Freshman, Sophomore.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 374 Total Rewards and Performance Management Credits: 3 (3-0-0)
Course Description: Principles and best practices for the strategic design and implementation of compensation and performance management systems.
Prerequisite: MGT 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 375 Advanced Supply Management Credits: 3 (3-0-0)
Course Description: Advanced design of purchasing and supply management within global supply chains.
Prerequisite: MGT 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 376 Advanced Service and Manufacturing Operations Credits: 3 (3-0-0)
Course Description: Advanced concepts for the management of operations in service and manufacturing companies.
Prerequisite: MGT 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 377 Advanced Logistics Credits: 3 (3-0-0)
Course Description: Advanced design and management of logistics and distribution operations within global supply chains.
Prerequisite: MGT 301.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 382 Management in an International Context Credits: 3 (3-0-0)
Course Description: Fundamentals of management taught in an international context. Emphasis on global management topics.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 410 Leadership and Organizational Behavior Credits: 3 (3-0-0)
Course Description: Behavior of people and groups as members of organizations.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 411 Leading High Performance Teams Credits: 3 (3-0-0)
Course Description: Design, management, and leadership of teams in organizational settings.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 420 New Venture Creation Credits: 3 (3-0-0)
Course Description: Entrepreneurs and the entrepreneurial process. Growth of an independent business.
Prerequisite: MGT 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 425 Organizational Communication Strategies Credits: 3 (3-0-0)
Course Description: Strategic communications in organizations; contribution that organizational members make whether acting as individual or group communicators.
Prerequisite: (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Registration Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 300</td>
<td>Leadership and Social Responsibility</td>
<td>3 (3-0-0)</td>
<td>Course Description: Social responsiveness of managers as they face expectations in the firm's internal and external environment.</td>
<td>None.</td>
<td>Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>Written consent of instructor.</td>
</tr>
<tr>
<td>MGT 375</td>
<td>New Venture Management</td>
<td>3 (3-0-0)</td>
<td>Course Description: Theories and skills necessary for managing startup and existing small firms.</td>
<td>MGT 375 and MGT 377 or MGT 376 and MGT 377 or MGT 378 or MGT 377 or MGT 379 or MGT 380.</td>
<td>Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>Written consent of instructor.</td>
</tr>
<tr>
<td>MGT 470</td>
<td>Managerial Decisions-Issues and Analysis</td>
<td>3 (3-0-0)</td>
<td>Course Description: Investigation and application of managerial decision-making processes and methods to solve problems in business functions.</td>
<td>None.</td>
<td>Fall, Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 471</td>
<td>Micro Issues in Supply Chain Management</td>
<td>3 (3-0-0)</td>
<td>Course Description: Managing the supply function (locally or globally) and the productive flow of materials in goods and services-producing supply chains.</td>
<td>MGT 301.</td>
<td>Fall.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 472</td>
<td>Macro Issues in Supply Chain Management</td>
<td>3 (3-0-0)</td>
<td>Course Description: Application of analytical and computer-based tools in the analysis and improvement of supply chains with variable demand and supply.</td>
<td>MGT 301.</td>
<td>Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 473</td>
<td>Employment Relations: Labor and Management</td>
<td>3 (3-0-0)</td>
<td>Course Description: Managerial decision making and action in labor-management relations as affected by labor legislation and administrative practices.</td>
<td>None.</td>
<td>Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 474</td>
<td>Human Resource Planning and Development</td>
<td>3 (3-0-0)</td>
<td>Course Description: Human resource planning, recruitment, selection, training, and development.</td>
<td>None.</td>
<td>Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 475</td>
<td>International Business Management</td>
<td>3 (3-0-0)</td>
<td>Course Description: Multinational corporations: their scope, activities, managerial problems and decisions.</td>
<td>None.</td>
<td>Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 476</td>
<td>Negotiation and Conflict Management</td>
<td>3 (3-0-0)</td>
<td>Course Description: Principles and practices of negotiation and conflict management including bargaining as a social and managerial activity.</td>
<td>None.</td>
<td>Fall, Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 477</td>
<td>Global Supply Chain Management</td>
<td>3 (3-0-0)</td>
<td>Course Description: Principles and best practices for the strategic design and implementation of global supply chains.</td>
<td>None.</td>
<td>Fall, Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
<tr>
<td>MGT 478</td>
<td>Study Abroad: International New Venture Creation</td>
<td>3 (3-0-0)</td>
<td>Course Description: New venture creation taught in an international setting focusing on multi-country contexts. Emphasis on entrepreneurship and intrapreneurship in today's global environments.</td>
<td>None.</td>
<td>Summer.</td>
<td>Traditional</td>
<td>No.</td>
<td>Written consent of instructor. Completion of 60 credit hours.</td>
</tr>
<tr>
<td>MGT 481</td>
<td>Practicum in Supply Chain Management</td>
<td>3 (1-4-0)</td>
<td>Course Description: Research and recommend solutions to &quot;real world&quot; supply chain management problems.</td>
<td>MGT 375 or MGT 377.</td>
<td>Spring.</td>
<td>Traditional</td>
<td>No.</td>
<td>None.</td>
</tr>
</tbody>
</table>
MGT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 600 Manufacturing Process and Systems Design Credits: 3 (3-0-0)
Course Description: Strategic understanding of alternate manufacturing processes and systems design support needed to manage those processes.
Prerequisite: BUS 620 and BUS 625.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 601 Enterprise Computing and Systems Integration Credits: 3 (3-0-0)
Also Offered As: CIS 601.
Course Description: Integrated extended enterprise planning and execution systems concepts including ERP, CRM, SCM, MRPII, business processes, front/back office systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Credit not allowed for both MGT 601 and CIS 601.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 611 Management of Organization Development Credits: 3 (3-0-0)
Course Description: Methods for managing organizational change.
Prerequisite: MGT 305 or MGT 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 612 Managing in a Global Context Credits: 3 (3-0-0)
Course Description: Global management and HR development issues/practices. Cross-cultural issues in organization behavior, recruitment, selection, training, compensation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 620 Management Credits: 3 (3-0-0)
Course Description: Practices, policies, philosophies, and behavior.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 625 Managerial Communication Practices Credits: 3 (3-0-0)
Course Description: Internal, external, and managerial communication. Managerial speaking and writing skills enhancement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in business.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 640 Supply Chain Management Strategies Credits: 2 (2-0-0)
Course Description: How to create an effective supply chain management system to establish an efficient network for supplying final consumption.
Prerequisite: MGT 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 665 Supply Chain Development and Management Credits: 2 (2-0-0)
Course Description: This course teaches the development and management of the global supply chain that plans, sources, makes and delivers an organization’s products.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MGT 667 Global Social Sustainable Entrepreneurship Credits: 3 (3-0-0)
Course Description: Global challenges—poverty, environmental degradation, public health, agriculture. Role of entrepreneurial management in private and public sector.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 668 New Venture Development for Social Enterprise Credits: 3 (3-0-0)
Course Description: Early stages of a new venture, including creation of business plan. Additional study of social entrepreneurship and sustainable business strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 671 Labor Management Relations Credits: 3 (3-0-0)
Course Description: Collective bargaining process, administration of contract, and impact of public policy on industrial relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 675 Service Operations/Supply Chain Management Credits: 3 (3-0-0)
Course Description: Supply chain management (SCM) and operations function. Primary focus on service sector.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 679 Principles of Strategic Management Credits: 3 (3-0-0)
Course Description: Processes through which firms choose and implement strategies. Formulation and implementation of strategic management process in variety of industries.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Management Science (QNT)

QNT 270 Basic Business Statistics Credits: 3 (2-2-0)
Course Description: Classical statistical techniques including hypothesis testing and multiple regression; model building, control charts, time series and forecasting.
Prerequisite: STAT 204.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

QNT 375 Models and Applications in Management Science Credits: 3 (2-2-0)
Course Description: Introduction and application of operations research techniques to business decision problems.
Prerequisite: STAT 204.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

QNT 570 Statistical Decision Making Credits: 3 (3-0-0)
Course Description: Classical statistical techniques including hypothesis testing and multiple regression; model building, control charts, time series and forecasting.
Prerequisite: QNT 270.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Certificate in Entrepreneurship

The Certificate in Entrepreneurship is composed of a series of courses which provides students with the knowledge and skills to successfully develop and assess the viability of for profit and not-for-profit "social and sustainable" business concepts, and plan for the funding and launch of new ventures whether they are stand alone businesses or new ventures within an existing company.

Effective Spring 2015

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 330</td>
<td>Corporate Innovation and Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>or MGT 360</td>
<td>Social and Sustainable Venturing</td>
<td></td>
</tr>
<tr>
<td>MGT 340</td>
<td>Fundamentals of Entrepreneurship</td>
<td>3</td>
</tr>
</tbody>
</table>
Certificate in Leadership in Organizations

The College of Business offers a certificate in Leadership in Organizations to students majoring in business administration. This certificate provides students with a research-based understanding of leadership principles and experience-based skill development opportunities. These leadership competencies are valuable for job attainment, job performance, and career progression for students of all concentrations in the College.

Effective Spring 2015

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 410</td>
<td>Leadership and Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MGT 411</td>
<td>Leading High Performance Teams</td>
<td>3</td>
</tr>
<tr>
<td>MGT 476</td>
<td>Negotiation and Conflict Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 9

Certificate in Managing Human Resources

The College of Business offers a certificate in Managing Human Resources to students majoring in business administration. This certificate will give students a basic understanding of the functional areas of human resource management to add to their specific major area. Students can expect an introduction to the field of human resource management including employment law, recruitment, selection, training and development, performance management, and compensation.

Effective Spring 2015

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 310</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>Select two of the following courses:</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>MGT 350</td>
<td>Employment Relations: The Legal Environment</td>
<td></td>
</tr>
<tr>
<td>MGT 374</td>
<td>Total Rewards and Performance Management</td>
<td></td>
</tr>
<tr>
<td>MGT 474</td>
<td>Human Resource Planning and Development</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 9

Certificate in Operations, Logistics and Supply Management

The College of Business offers a Certificate in Operations, Logistics and Supply Management to business students, to give students expertise in the core areas of supply chain management (SCM) and to prepare them for SCM careers. Companies seek employees able to mitigate risk in global supply chains, grasp the cost trade-offs inherent to various SCM activities, and build relationships with key trading partners. This certificate will give students the ability to add value through coordination of functions and firms.

Effective Spring 2015

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 375</td>
<td>Advanced Supply Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 376</td>
<td>Advanced Service and Manufacturing Operations</td>
<td>3</td>
</tr>
<tr>
<td>MGT 377</td>
<td>Advanced Logistics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 9

Major in Business Administration, Human Resource Management Concentration

This program is designed to develop in students a comprehensive knowledge of human resource (HR) management along with the skills necessary for implementing strategic, effective, and legally defensible HR practices in contemporary business organizations. Human resource professionals operate in a dynamic and changing world, managing the organization’s relationship with its employees. They develop and manage people, practices, and policies to ensure that they produce employee attitudes, skills, behaviors, and performance that companies need to achieve their strategic goals. They are commonly responsible for recruiting, hiring, onboarding, training and developing, evaluating performance, compensating, providing benefits, counseling, and terminating employees. HR Professionals are employed in every industry and are an essential partner in an organization’s strategic vision for the future and for ensuring the right people are in place. It is essential that an HR professional learn and master key knowledge, skills, and abilities including critical thinking, confidentiality, change management, communication, negotiation and conflict management, business acumen, interpersonal skills, organizational skills, and fairness. In addition to the All-University Core Curriculum, course work for a concentration in Human Resource Management includes the College of Business Core and various management electives that allow the student to structure a program around his or her educational and/or career interests.

Learning Outcomes

Students will demonstrate:

- Knowledge and skills necessary to assume entry-level HR positions in preparation for pursuing careers in a wide variety of organizations and industries
- Knowledge and skills to develop and implement HR practices in a strategic, legal, and ethical manner
- Understanding of HR’s role in the efficient and effective operations of organizations and their human resources
- The ability to create and manage HR practices that respect and encourage diversity and inclusion in the workplace

Potential Occupations

Some examples include, but are not limited to the following: Human Resource Assistant, Recruiter, Labor Relations Specialist, Human Resource Manager, Employee Benefits Manager, Training and
### Requirements

**Effective Fall 2015**

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.

### Freshman

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Business Information Systems</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Electives</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td>33</td>
<td></td>
</tr>
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</table>

### Sophomore

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 210</td>
<td>Introduction to Financial Accounting</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>STAT 204</td>
<td>Statistics for Business Students</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Electives</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

### Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the concentrations.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
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<td>MGT 301</td>
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### Senior

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<tr>
<td>FIN 300</td>
<td>Principles of Finance</td>
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<td>MGT 374</td>
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</table>
Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.

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Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<tbody>
<tr>
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<td>BUS 100</td>
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<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<td>Biological and Physical Sciences</td>
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<td>Global and Cultural Awareness</td>
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<tr>
<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise</td>
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<td>Business Information Systems</td>
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<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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<tr>
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<td>Calculus in Management Sciences (GT-MA1)</td>
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Sophomore

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<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
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<td>BUS 300</td>
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<td>ECON 204</td>
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<tr>
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<td>Introduction to Managerial Accounting</td>
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</table>
Major in Business Administration, Organization and Innovation Management Concentration

This program is designed to provide its students with a comprehensive knowledge of organization and innovation management along with the skills necessary for effective decision making in a business environment that is diverse, global, and highly competitive. Managers are dynamic individuals who are responsible for projects, teams, and processes. They coordinate, motivate, strategize, plan, budget, initiate action, evaluate performance, and control process and activities. They are commonly responsible for overseeing a budget and the activities of others to ensure that the organization's goals and objectives are met. Managers are employed in every industry. It is essential that a manager learn and master key knowledge, skills, and abilities including how to handle conflict, communicate effectively, negotiate, create positive and productive work environments, and effectively manage the numerous issues associated with the human resources of an organization.

<table>
<thead>
<tr>
<th>Major in Business Administration, Organization and Innovation Management Concentration</th>
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<tbody>
<tr>
<td>STAT 204</td>
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<td>Social-Ethical-Regulatory Issues in Business</td>
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<td>3</td>
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<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
<td>X</td>
<td></td>
<td>3</td>
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<td>MGT 310</td>
<td>Human Resource Management</td>
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<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
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<td>Human Resource Planning and Development</td>
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### Senior

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<tbody>
<tr>
<td>FIN 300</td>
<td>Principles of Finance</td>
<td>X</td>
<td>4A,4B</td>
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<tr>
<td>MGT 374</td>
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<tr>
<td>Select two courses from the following:</td>
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<tr>
<td>MGT 410</td>
<td>Leadership and Organizational Behavior</td>
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<tr>
<td>MGT 411</td>
<td>Leading High Performance Teams</td>
<td></td>
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<tr>
<td>MGT 473</td>
<td>Employment Relations: Labor and Management</td>
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<td>MGT 476</td>
<td>Negotiation and Conflict Management</td>
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<td>Elective</td>
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### Semester 8

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<tr>
<td>BUS 479</td>
<td>Strategic Management</td>
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<td>4A,4C</td>
</tr>
<tr>
<td>Select one of the following courses not previously taken:</td>
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<tr>
<td>MGT 410</td>
<td>Leadership and Organizational Behavior</td>
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<td>MGT 411</td>
<td>Leading High Performance Teams</td>
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<td>MGT 473</td>
<td>Employment Relations: Labor and Management</td>
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<td>MGT 476</td>
<td>Negotiation and Conflict Management</td>
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<td>MKT 300</td>
<td>Marketing</td>
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<td>Elective</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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</table>

**Program Total Credits:** 120
Students may choose focused course work in entrepreneurship, supply chain management, and human resource management. These are designed to help students acquire skill sets so that, upon graduation, they will be able to “hit the ground running.” In addition to the All-University Core Curriculum, course work for a concentration in organization and innovation management includes the College of Business Core and various management electives that allow the student to structure a program around his or her educational and/or career interests.

**Learning Outcomes**

Students will demonstrate:

- Knowledge and skills adequate to assume entry-level management positions in the broad spectrum of organizations so they can pursue careers in a wide variety of organizations and industries
- Ethical decision making skills
- An understanding of necessary change management and innovation skills
- An understanding of business principles and practices in an international context

**Potential Occupations**

Some examples include, but are not limited to the following: account management, analyst, client services, consultant, logistics management, supply management, management trainee, corporate recruiter, business owner, events planner, executive assistant, human resource specialist, project management, relationship management, retail management, team leader, trainer/facilitator.

**Requirements**

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<td>BUS 150</td>
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<td>CIS 200</td>
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<tr>
<td>CO 150</td>
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<td>ECON 202</td>
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### Sophomore

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<td>BUS 220</td>
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<td>ECON 204</td>
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<td>STAT 204</td>
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<td>Biological and Physical Sciences</td>
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<td>Historical Perspectives</td>
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### Junior

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<td>MGT 301</td>
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<td>MGT 310</td>
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All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the concentrations.
Major in Business Administration, Organization and Innovation Management Concentration

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>MGT 320</td>
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<td>MGT 340</td>
<td>Fundamentals of Entrepreneurship</td>
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Select one from the following:

- MGT 410: Leadership and Organizational Behavior
- MGT 411: Leading High Performance Teams

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Senior

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<td>FIN 300</td>
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</table>

Select four courses from the following not taken in the junior year:

- MGT 330: Corporate Innovation and Entrepreneurship
- MGT 350: Employment Relations: The Legal Environment
- MGT 360: Social and Sustainable Venturing
- MGT 376: Advanced Service and Manufacturing Operations
- MGT 410: Leadership and Organizational Behavior
- MGT 411: Leading High Performance Teams
- MGT 420: New Venture Creation
- MGT 440: New Venture Management
- MGT 475: International Business Management
- MGT 476: Negotiation and Conflict Management
- MKT 300: Marketing
- Global and Cultural Awareness

<table>
<thead>
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>Arts and Humanities</td>
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Total Credits: 14

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**Sophomore**

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**Total Credits** 15

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<td>MGT 301</td>
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<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
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**Total Credits** 15

**Senior**

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**Total Credits** 15

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**Total Credits** 15
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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**Major in Business Administration, Supply Chain Management Concentration**

This program is designed to develop in students a comprehensive knowledge of global supply chain management (SCM) along with the skills necessary for implementing strategic, efficient and effective SCM practices in contemporary business enterprises. SCM Professionals operate in a dynamic and changing world, managing resources and relationships with suppliers and customers worldwide. They are commonly responsible for practices related to managing products, information and cash flows through the global value chain including product development, forecasting demand, managing production and service operations, purchasing materials, order fulfillment, distribution, returns management, trade compliance, and customer service. SCM Professionals are employed in every industry and are essential in ensuring a company’s offerings provide value for its customers. It is essential that an SCM professional learn and master key knowledge, skills, and abilities including critical thinking, ethics, change management, communication, negotiation and conflict management, business acumen, interpersonal skills, and organizational leadership skills. In addition to the All-University Core Curriculum, course work for a concentration in Supply Chain Management includes the College of Business Core and various management electives that allow the student to structure a program around his or her educational and/or career interests.

**Learning Outcomes**

Students will demonstrate:

- Knowledge and skills adequate to assume entry-level SCM positions in the broad spectrum of organizations and be prepared to pursue careers in a wide variety of organizations and industries
- Knowledge of how global supply chains operate and skills to make decisions to support strategic and tactical activities to manage efficient and effective supply chains
- An understanding of ethical decision making skills with respect to dealing with supplier and customer organizations
- An understanding of the skills required to manage risk, innovation, and the dynamics of supply chains in the current global economy

**Potential Occupations**

Some examples include, but are not limited to the following titles: Buyer, Supply Manager, Purchasing Manager, Materials Supervisor, Production Manager, Logistics Analyst, Transportation Analyst, Transportation Manager, Account Manager, Warehouse Supervisor, Supply Chain Consultant.

**Requirements**

**Effective Fall 2015**

The College of Business requires a minimum grade point average of 2.000 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.

**Freshman**

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**Sophomore**

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<td>BUS 220</td>
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BUS 300 Business Writing and Communication (GT-CO3) 2 3
ECON 204 Principles of Macroeconomics (GT-SS1) 3C 3
STAT 204 Statistics for Business Students 3

Biological and Physical Sciences 3A 3
Historical Perspectives 3D 3
Electives 6

Total Credits 30

Junior

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the concentrations.

BUS 260 Social-Ethical-Regulatory Issues in Business 3
MGT 301 Supply Chain Management 3
MGT 320 Contemporary Management Principles/Practices 3

Select two courses from the following not taken elsewhere: 6
MGT 375 Advanced Supply Management
MGT 376 Advanced Service and Manufacturing Operations
MGT 377 Advanced Logistics
MGT 478 Global Supply Chain Management

Electives 12

Total Credits 30

Senior

BUS 479 Strategic Management 4A,4C 3
FIN 300 Principles of Finance 4A,4B 3
MKT 300 Marketing 4B 3

Select one from the following: 3
MGT 411 Leading High Performance Teams
MGT 476 Negotiation and Conflict Management

Select three courses from the following not taken elsewhere: 9
CIS 320 Project Management for Information Systems
CIS 411 Enterprise Resource Planning Systems
FIN 370 Financial Management-Theory and Application
MGT 330 Corporate Innovation and Entrepreneurship
MGT 375 Advanced Supply Management
MGT 376 Advanced Service and Manufacturing Operations
MGT 377 Advanced Logistics
MGT 411 Leading High Performance Teams
MGT 475 International Business Management
MGT 476 Negotiation and Conflict Management
MGT 486 Practicum in Supply Chain Management
MKT 330 Business Customer Relationships

Electives 4

Total Credits 27

Program Total Credits: 120

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.
2 Of the two-of-three-course selection in the junior year, the course not selected may be included among the three-course selection in the senior year. Of the two-course selection of MGT 411 and MGT 476 in the senior year, the course not selected may be included among the three-course selection below it. Courses may not double-count for these requirements.
3 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.
Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.

To prepare for first semester: The curriculum for the Business Administration - Supply Chain Management Concentration assumes student will be able to successfully complete calculus within their first year.

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<tr>
<th>Freshman</th>
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Select two courses from the following:
- Advanced Supply Management
- Advanced Service and Manufacturing Operations
- Advanced Logistics

MGT 478 Global Supply Chain Management

Senior

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Semester 8

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<td>Program Total Credits:</td>
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Master of Management Practice, Plan C (M.M.P.)

Effective Summer 2009

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>ACT 600</td>
<td>Accounting for Managers</td>
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<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
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<tr>
<td>FIN 600</td>
<td>Financial Management-Theory and Case Studies</td>
<td>3</td>
</tr>
<tr>
<td>MGT 620</td>
<td>Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 679</td>
<td>Principles of Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 600</td>
<td>Marketing Management and Strategy</td>
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<td>Business electives</td>
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</table>

A minimum of 30 credits are required to complete this program.

Department of Marketing

Office in Rockwell Hall, Room 111
(970) 491-5063
Biz.colostate.edu/marketing (http://biz.colostate.edu/marketing)

Professor David I. Gilliland, Chair

Undergraduate
Major in Business Administration
- Marketing Concentration

Certificates
- Business-to-Business Selling
- Customer Experience Management
- Marketing Communication and Branding
• Market Research and Data Analytics
• Strategic Marketing

Graduate Certificates
• Graduate Certificate in Marketing Management

Courses
Marketing (MKT)

MKT 300 Marketing Credits: 3 (3-0-0)
Course Description: Market and buyer analysis, product and service development, pricing, promotion, advertising, selling, and distribution.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both MKT 300 and MKT 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 305 Fundamentals of Marketing Credits: 3 (3-0-0)
Course Description: Overview of marketing activities involved in provision of products and services to consumers, including target markets and managerial aspects.
Prerequisite: AREC 202 or ECON 101 or ECON 202.
Registration Information: Credit not allowed for both MKT 305 and MKT 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 307 Fundamentals of Sports Marketing Credits: 3 (3-0-0)
Course Description: General marketing and the application within sporting related contexts. Focuses on the nature and scope of marketing a sports franchise as well as marketing traditional products or services with the assistance of sports figures.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only. Sport Management Minors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 315 Marketing Communication Design Credits: 3 (3-0-0)
Course Description: Creating multiple kinds of marketing communications using graphic design software.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Business majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 320 Integrated Marketing Communications Credits: 3 (3-0-0)
Course Description: Principles and practices of managing promotional activities including advertising, sales promotion, and other major media.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 330 Business Customer Relationships Credits: 3 (3-0-0)
Course Description: Managing relationships with distribution channel intermediaries and business customers.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 360 Retailing Credits: 3 (3-0-0)
Also Offered As: DM 360.
Course Description: Retail markets, institutions, operations, and problems.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit not allowed for both MKT 360 and DM 360. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 361 Buyer Behavior Credits: 3 (3-0-0)
Course Description: Marketing analysis of buying behavior of individuals, households, businesses, and not-for-profit organizations.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 362 Professional Selling Credits: 3 (3-0-0)
Course Description: Persuasive personal communications in selling consumer and industrial products and services.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 363 Sales Management Credits: 3 (3-0-0)
Course Description: Recruiting, selecting, training, compensating, motivating, supervising, and evaluating a sales force.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 364 Product Development and Management Credits: 3 (3-0-0)
Course Description: Consumer and industrial product development and management issues as an integral part of the marketing mix.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 365 International Marketing Credits: 3 (3-0-0)
Course Description: Analysis of international markets and development of strategic and tactical options for marketing across national boundaries.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MKT 366  Services Marketing  Credits: 3 (3-0-0)  
Course Description: Customer service issues and unique challenges involved in marketing and management of services operations.  
Prerequisite: MKT 300 or MKT 305.  
Terms Offered: Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 367  Sports Marketing  Credits: 3 (3-0-0)  
Course Description: The nature and scope of applying marketing strategy and tactics in the sports marketing environment.  
Prerequisite: MKT 300 or MKT 305.  
Registration Information: Credit allowed for only one of the following: MKT 367, MKT 367A, MKT 367B.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 370  Digital Marketing  Credits: 3 (3-0-0)  
Course Description: Introduction to digital marketing: the landscape and tactics needed to execute marketing strategy in an online, connected, world.  
Prerequisite: MKT 300 or MKT 305.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 410  Marketing Research  Credits: 3 (3-0-0)  
Course Description: Role and methodology of research in business emphasizing selection of study's direction, collecting data, and choosing techniques for analyzing these data.  
Prerequisite: (MKT 300 or MKT 305) and (STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315).  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 440  Pricing and Financial Analysis in Marketing  Credits: 3 (3-0-0)  
Course Description: Financial analysis involved in addressing marketing problems; advanced study of pricing strategy and tactics.  
Prerequisite: MKT 300 or MKT 305.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 450  Marketing Analytics  Credits: 3 (3-0-0)  
Course Description: Analytic techniques used by marketers to transform data into decision-making information.  
Prerequisite: MKT 410.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 479  Marketing Strategy and Management  Credits: 3 (3-0-0)  
Course Description: Marketing decisions involving integration of elements of the marketing mix.  
Prerequisite: MKT 410.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 486  Marketing Practicum  Credits: 3 (0-0-3)  
Course Description: To give students the experience of working on a real marketing problem with a team at a sponsoring firm.  
Prerequisite: MKT 300 or MKT 305.  
Registration Information: Written consent of instructor required.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MKT 487  Internship  Credits: 3 (0-0-9)  
Course Description:  
Prerequisite: None.  
Registration Information: Written consent of instructor required.  
Maximum of 3 credits allowed in course.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

MKT 492  Seminar  Credits: 3 (0-0-3)  
Course Description:  
Prerequisite: MKT 300 or MKT 305.  
Registration Information: Written consent of instructor required.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

MKT 495  Independent Study  Credits: Var[1-5] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: 2.75 GPA or better.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

MKT 496  Group Study  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

MKT 498  Research  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

MKT 600  Marketing Management and Strategy  Credits: 3 (3-0-0)  
Course Description: Processes of customer value creation and value capture; marketing strategy analysis.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to a master's program in business.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
MKT 601 Marketing for Social Sustainable Enterprises  Credits: 3 (3-0-0)
Course Description: Customer and stakeholder value creation and capture. Marketing strategy with emphasis on social sustainable organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 610 Qualitative Marketing Research Methods  Credit: 1 (1-0-0)
Course Description: Overview of qualitative research methods including focus groups, in-depth interviews, observations, and projective techniques.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 611 Quantitative Marketing Research Methods  Credit: 1 (1-0-0)
Course Description: Overview of the field of business research, with a focus on quantitative research methods.
Prerequisite: BUS 601 and BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 621 Search Engine Marketing and Optimization  Credit: 1 (1-0-0)
Course Description: Focuses on search engine optimization (SEO) and search engine marketing (SEM). Students will improve the visibility of webpage(s) in the “organic results” through a variety of SEO tactics. Use paid activities (using the Google AdWords platform) to drive traffic from the search engine results page. Emphasizes application of class frameworks and concepts.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate.
Registration Information: Admission to a master’s program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 662 Strategic Selling for Business Customers  Credit: 1 (1-0-0)
Course Description: Examination of sales strategies, sales tactics and best practices in professional selling with a primary context in business selling.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 667 Services Marketing Management  Credit: 1 (1-0-0)
Course Description: Fundamental concepts and strategies that differentiate the marketing of services from the marketing of tangible goods, including customer satisfaction.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 692 Seminar  Credits: 3 (0-0-3)
Course Description: Critical review and discussion of relevant marketing topics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 695 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: 3.25 GPA or better.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Certificate in Business-To-Business Selling

The Certificate in Business-To-Business Selling gives students in-depth understanding of: 1) what business customers expect from vendors and business partners; 2) how to conduct customer and competitive analyses as an input into the sales process; 3) the planning and implementation of trust-based sales encounters, and 4) the management of the sales process to include defining sales strategy, recruiting, selection, training, leadership, and determining sales force effectiveness.

Additional coursework may be required due to prerequisites.

Effective Fall 2016

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>MKT 330</td>
<td>Business Customer Relationships</td>
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<td>MKT 362</td>
<td>Professional Selling</td>
<td>3</td>
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<td>MKT 363</td>
<td>Sales Management</td>
<td>3</td>
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<tr>
<td><strong>Total Credits</strong></td>
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</table>
Graduate Certificate in Marketing Management

Graduate coursework in marketing to provide students with a foundation and in-depth understanding of marketing topics.

Effective Fall 2015

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
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<td>BUS 655</td>
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<td>BUS 656</td>
<td>Marketing Strategy and Planning</td>
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<td>MKT 610</td>
<td>Qualitative Marketing Research Methods</td>
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<td>MKT 611</td>
<td>Quantitative Marketing Research Methods</td>
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<td>MKT 661</td>
<td>Consumer Behavior</td>
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<td>MKT 662</td>
<td>Strategic Selling for Business Customers</td>
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<td>MKT 667</td>
<td>Services Marketing Management</td>
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*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Major in Business Administration, Marketing Concentration

This program will provide its students with a comprehensive knowledge of marketing along with the skills necessary for effective decision making in a business environment that is diverse, global, and highly competitive. As defined by the American Marketing Association, marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customer, clients, partners, and society at large. Organizations engage in marketing activities, such as conducting market research, developing new products, establishing pricing approaches, designing marketing communications, and building customer relationships. Marketing is people-oriented and ever changing. A person’s analytical and creative abilities are brought to bear on developing solutions to various marketing problems while operating within a continuously evolving marketplace. In addition to the All-University Core Curriculum, course work for a major in business administration/marketing includes calculus, economics, statistics, and business foundation classes along with courses that specifically examine marketing issues and practices.

Learning Outcomes

Students will demonstrate:

- The ability to identify a marketing problem and key influences on that problem, to use appropriate qualitative and quantitative analysis and market research techniques to evaluate the marketing problem, and to evaluate alternative solutions
- The ability to make a final recommendation that thoroughly addresses the problem/opportunity based on: making reasonable assumptions; considering appropriate customer, competitor, and company constraints; clearly addressing the marketing issues; and demonstrating an understanding of the interrelationships of marketing concepts
- The ability to use marketing terminology correctly
- The ability to develop persuasive and convincing arguments that support recommendations
- The ability to design a marketing plan

Potential Occupations

Between one-fourth and one-third of the civilian labor force is employed in marketing-related positions. Examples of possible careers include, but are not limited to: marketing strategy planning, brand management, product development, market research, digital marketing, pricing management, sales management, advertising, and promotion management.

Requirements

The College of Business requires a minimum grade point average of 2.00 in business and economics courses as a graduation requirement. A student who has less than this average at the end of any term is subject to referral by the department head or college dean to the Faculty Council Committee on Scholastic Standards of CSU for consideration of academic dismissal from the College of Business.

Effective Fall 2016

Freshman

<table>
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<tr>
<th>Course</th>
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<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
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<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<td>BUS 201</td>
<td>Foundations of Sustainable Enterprise</td>
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<td>CIS 200</td>
<td>Business Information Systems</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>Arts and Humanities</td>
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<td></td>
<td>Biological and Physical Sciences</td>
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**Sophomore**

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<td>Introduction to Financial Accounting</td>
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<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
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<td>BUS 220</td>
<td>Ethics in Contemporary Organizations (GT-AH3)</td>
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<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td>3</td>
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<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<td>STAT 204</td>
<td>Statistics for Business Students</td>
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<td>Biological and Physical Sciences</td>
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<td>3A 3</td>
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<tr>
<td>Historical Perspectives</td>
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<td>3D 3</td>
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<tr>
<td>Electives</td>
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</table>

**Total Credits** 30

**Junior**

All freshman and sophomore required courses must be completed prior to or concurrent with first enrollment in required junior and senior courses. By the beginning of the junior year, students must select one of the concentrations.

<table>
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<td>BUS 300</td>
<td>Business Writing and Communication (GT-CO3)</td>
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<tr>
<td>FIN 300</td>
<td>Principles of Finance</td>
<td>4A,4B</td>
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<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
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<tr>
<td>MKT 300</td>
<td>Marketing</td>
<td>4B 3</td>
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<td>Select two courses from the following:</td>
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<tr>
<td>MKT 320</td>
<td>Integrated Marketing Communications</td>
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<td>MKT 330</td>
<td>Business Customer Relationships</td>
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<td>MKT 360/DM 360</td>
<td>Retailing</td>
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<td>MKT 362</td>
<td>Professional Selling</td>
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<td>MKT 363</td>
<td>Sales Management</td>
<td></td>
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<td>MKT 364</td>
<td>Product Development and Management</td>
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<td>MKT 365</td>
<td>International Marketing</td>
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<td>MKT 366</td>
<td>Services Marketing</td>
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<td>Sports Marketing</td>
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<td>MKT 370</td>
<td>Digital Marketing</td>
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<td>MKT 440</td>
<td>Pricing and Financial Analysis in Marketing</td>
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<tr>
<td>MKT 487</td>
<td>Internship</td>
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<tr>
<td>MKT 492</td>
<td>Seminar</td>
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<tr>
<td>MKT 361</td>
<td>Buyer Behavior</td>
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**Total Credits** 30

**Senior**

<table>
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<td>BUS 479</td>
<td>Strategic Management</td>
<td>4A,4C</td>
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<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
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<tr>
<td>Select two courses from the following not taken in the junior year:</td>
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<tr>
<td>MKT 315</td>
<td>Marketing Communication Design</td>
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<tr>
<td>MKT 320</td>
<td>Integrated Marketing Communications</td>
<td></td>
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<tr>
<td>MKT 330</td>
<td>Business Customer Relationships</td>
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<tr>
<td>MKT 360/DM 360</td>
<td>Retailing</td>
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<td>MKT 362</td>
<td>Professional Selling</td>
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<td>MKT 363</td>
<td>Sales Management</td>
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<tr>
<td>MKT 364</td>
<td>Product Development and Management</td>
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<td>MKT 365</td>
<td>International Marketing</td>
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<tr>
<td>MKT 366</td>
<td>Services Marketing</td>
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</tbody>
</table>
MKT 367  Sports Marketing
MKT 370  Digital Marketing
MKT 440  Pricing and Financial Analysis in Marketing
MKT 450  Marketing Analytics
MKT 487  Internship
MKT 492  Seminar
MKT 410  Marketing Research 3
MKT 479  Marketing Strategy and Management 3

Global and Cultural Awareness 3E 3
Electives 9

Total Credits 30

Program Total Credits: 120

1 Students enrolled in the Business Administration major prior to Fall semester 2013, are not required to take BUS 201 and BUS 220.
2 Students who have taken FIN 305 and/or MKT 305 prior to admission to the College of Business may substitute those courses to satisfy the category 4A and 4B requirements. All other students are required to take FIN 300 and MKT 300 to satisfy categories 4A and 4B.
3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 6 elective credits must be upper-division.

Students are not to utilize the satisfactory/unsatisfactory (S/U) grading option for any Business concentration course or any Business core course (Business and non-Business subject codes) except when a course only allows S/U grading.

Major Completion Map

Distinctive Requirements for Degree Program:

To Declare this Major: Business is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in Department for more information.

To prepare for first semester: The curriculum for the Business Administration - Marketing concentration assumes students will be able to successfully complete calculus within their first year.

Freshman

Semester 1

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>BUS 100</td>
<td></td>
<td>X</td>
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<td>BUS 150</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
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<td>CO 150</td>
<td></td>
<td>X 1A</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
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Total Credits 14

Semester 2

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<tr>
<td>BUS 201 Foundations of Sustainable Enterprise</td>
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<td>X</td>
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<tr>
<td>CIS 200 Business Information Systems</td>
<td></td>
<td>X</td>
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<tr>
<td>ECON 202 Principles of Microeconomics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
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<tr>
<td>MATH 141 Calculus in Management Sciences (GT-MA1)</td>
<td>X</td>
<td>1B</td>
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BUS 100, BUS 150, and CO 150 must be completed by the end of Semester 2. X

Total Credits 16

Sophomore

Semester 3

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<tr>
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<tr>
<td>ACT 210 Introduction to Financial Accounting</td>
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<td>BUS 220 Ethics in Contemporary Organizations (GT-AH3)</td>
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<td>ECON 204 Principles of Macroeconomics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
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<tr>
<td>Biological and Physical Sciences</td>
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Total Credits 15
### Major in Business Administration, Marketing Concentration

#### Semester 4
<table>
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<tr>
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<tbody>
<tr>
<td>ACT 220</td>
<td>Introduction to Managerial Accounting</td>
<td>X</td>
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<tr>
<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
<td></td>
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<td>STAT 204</td>
<td>Statistics for Business Students</td>
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<td></td>
<td>Historical Perspectives</td>
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#### Junior

**Semester 5**
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<td>Business Writing and Communication (GT-CO3)</td>
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<td>FIN 300</td>
<td>Principles of Finance</td>
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<td>MKT 300</td>
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<td><strong>STAT 204 must be completed by the end of Semester 5.</strong></td>
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**Semester 6**
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<tbody>
<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
<td>X</td>
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<td>MKT 361</td>
<td>Buyer Behavior</td>
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**Senior**

**Semester 7**
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<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
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<td>Global and Cultural Awareness</td>
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<td><strong>FIN 300 and MKT 410 must be completed by the end of Semester 7.</strong></td>
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**Semester 8**
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<tr>
<td>BUS 479</td>
<td>Strategic Management</td>
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<td>MKT 410</td>
<td>Marketing Research</td>
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<td>MKT 479</td>
<td>Marketing Strategy and Management</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Program Total Credits:** 120
College of Engineering

Office in Engineering Building, Room 202
(970) 491-3366
engr.colostate.edu (http://www.engr.colostate.edu)

Professor David I. McLean, Dean
Professor Anthony Marchese, Associate Dean

Undergraduate Majors
• Biomedical Engineering
• Chemical and Biological Engineering
• Civil Engineering
• Computer Engineering
• Electrical Engineering
• Engineering Science
• Environmental Engineering
• Mechanical Engineering

Interdepartmental Majors
• Major in Engineering Science

Dual Degree Programs
• Majors in Biomedical Engineering (B.S.) and Chemical and Biological Engineering (B.S.)
• Majors in Biomedical Engineering (B.S.) and Electrical Engineering, Electrical Engineering Concentration (B.S.)
• Majors in Biomedical Engineering (B.S.) and Electrical Engineering, Lasers and Optical Engineering Concentration (B.S.)
• Majors in Biomedical Engineering (B.S.) and Mechanical Engineering (B.S.)
• Majors in Engineering Science (B.S.) and International Studies (B.A.)
• Majors in Interdisciplinary Liberal Arts (B.A.) and Engineering Science (B.S.)

Undergraduate Minors
• Biomedical Engineering Interdisciplinary Minor
• Energy Engineering Interdisciplinary Minor
• Environmental Engineering

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs

Master’s Programs
• Master of Engineering, Plan C, Biomedical Engineering Specialization
• Master of Engineering, Plan C, Chemical Engineering Specialization
• Master of Engineering, Plan C, Civil Engineering Specialization
• Master of Engineering, Plan C, Computer Engineering Specialization
• Master of Engineering, Plan C, Electrical Engineering Specialization
• Master of Engineering, Plan C, Engineering Management Specialization
• Master of Engineering, Plan C, Mechanical Engineering Specialization
• Master of Engineering, Plan C, Systems Engineering Specialization
• Master of Science in Systems Engineering, Plan A
• Master of Science in Systems Engineering, Plan B

Ph.D. Programs
• Ph.D. in Systems Engineering

Graduate Certificates
• Certificate in Systems Engineering Practice

The mission of the College of Engineering is to provide high quality teaching, advising, research, outreach, and service in a land grant, Carnegie Class I environment and to serve the people and industries of the state, nation, and world.

Engineers are critically involved in every facet of modern technological society, processing information, designing systems and equipment, maintaining society’s infrastructure, solving environmental and energy problems, and helping attain desired levels of efficiency and comfort. The College of Engineering continues its tradition—a tradition as old as CSU—of providing world-class training in the basic fields of engineering through both undergraduate instruction and graduate programs strongly supported by modern research facilities and distinguished faculty.

College Programs

The Engineering Accreditation Commission of ABET (http://www.abet.org) accredits all engineering undergraduate programs except the dual-degree program in Biomedical Engineering. The School of Biomedical Engineering and the College of Engineering will apply for accreditation for the dual-degree in Biomedical Engineering according to ABET rules, which require a graduate from the program prior to accreditation.

Undergraduate programs are administered by the Departments of Chemical and Biological Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical Engineering. These departments offer four-year programs leading to a Bachelor of Science degree. Although emphasis is on broad training in basic engineering, students may specialize to some extent by proper choice of technical electives.

A program leading to a Bachelor of Science degree with a major in Engineering Science is coordinated by the Associate Dean for Academic Affairs in the College of Engineering. This program offers three concentrations: Engineering Physics, Space Engineering, Teacher Education, and two dual degrees offered through the College of Liberal Arts resulting in degrees in both Liberal Arts and Engineering.
Students may consider simultaneously completing the requirements for a second major. See Second Major Requirements for a complete description of the program. A student may pursue a minor program of study inside or outside the College of Engineering in conjunction with the desired engineering major.

College of Engineering General Objectives and Outcomes

Outcomes
Graduates of the undergraduate engineering programs will be able to:

- Apply knowledge of mathematics, science, and engineering.
- Identify, formulate, and solve engineering problems.
- Design and conduct experiments and analyze and interpret data.
- Design a system, component, or process to meet demand needs within realistic constraints.
- Communicate effectively.
- Function in multi-disciplinary teams.
- Use the techniques, skills, and modern engineering tools necessary for engineering practice.

They also shall have:

- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- A knowledge of contemporary issues.
- An understanding of professional and ethical responsibility.
- A recognition of the need for, and an ability to engage in, life-long learning.

Objectives
Individual program outcomes and objectives are given at the departments’ websites and below, in this catalog.

International Opportunities
Education abroad programs are available to students in the College of Engineering. Because knowledge of other cultures is valuable in understanding our own, students are strongly encouraged to take a summer or semester to study outside the United States as part of their overall program at CSU. Students interested in study abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting, the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Registration as a Professional Engineer
Registration and licensing are required under certain legally defined circumstances in order to practice as an engineer. The College of Engineering actively encourages all of its students to fulfill the necessary requirements as soon as they are eligible. The Fundamentals of Engineering Examination (FE) administered by the State Board of Registration for Professional Engineers and Professional Land Surveyors may be taken by seniors from ABET accredited programs during the two semesters prior to graduation. After the required practical experience is completed, the Principles and Practice of Engineering Examination (PE) for licensing may be taken for licensure in the engineering profession.

Professional Development
Each department maintains its own standards and program requirements for student professional development. Additionally all students in the College of Engineering are required to attend a minimum number of workshops provided by the College’s Professional Learning Institute.

Admission Information
Students may be admitted to a specific undergraduate major in this college or as undecided engineering freshmen (Engineering Open Option). Undecided engineering students must specify their choice of major prior to registration for the sophomore year. Should the demand for any engineering major exceed the capacity to maintain a high-quality education, the college may find it necessary to limit enrollment in some majors. The undecided engineering student who wishes to transfer to one of these majors may be at a disadvantage when demand exceeds capacity. In general, students are better served by selecting one of the college’s majors at admission and then changing majors, if necessary, rather than entering as undecided freshmen.

High School Graduates
See General Policies for Undergraduate Admissions for specific College of Engineering requirements. The required units listed are minimums. Students desiring to enter the engineering majors are urged to take available advanced math, English, computer skills, and natural sciences classes.

Course Placement and Advising for Freshmen
All entering freshmen are required to take the mathematics placement examination prior to registration. The examination results, together with other information about students, are used by faculty advisors to counsel students. Those with weaknesses in mathematics may be advised to take up to five math courses (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126) before enrolling in calculus (MATH 160).

Transfer Students
Advisors in each department are available to assist students who wish to transfer. Should the demand for any engineering major exceed the capacity to maintain a high-quality education, individual departments may find it necessary to enforce more stringent requirements.

Transfer of credits earned at other colleges and universities within Colorado is facilitated by the articulation agreements from one university to another on course equivalencies.

Change of Major to Engineering
Students who wish to change from another CSU major are selected for admission once each term; students are admitted based on academic criteria. Some majors may specify more stringent requirements in math and science or other courses. Engineering courses are normally open to engineering majors only.

Curricular Requirements
The curricula of the College of Engineering include courses in engineering, mathematics, science, humanities, and social sciences. During the first two years, all engineering students take coursework emphasizing mathematics, physics, chemistry, and basic engineering; because all branches of engineering rely on this foundation. The junior and senior years are devoted primarily to a balanced selection of specialized engineering courses. The minimum number of credits for graduation with a Bachelor of Science degree varies with the engineering major.

Good engineers are not only competent to render professional service in their fields of specialization, but are able to assume leadership roles as
citizens. To broaden the students’ perspectives in non-technical areas, the programs in engineering require a minimum of 12 to 15 credits in arts and humanities and behavioral and social sciences to be selected from anthropology, economics, foreign languages, history, literature, philosophy, political science, psychology, and sociology. Courses in art, geography, music, speech, and theatre may also be selected with the prior approval of the advisor. These courses must be selected in such a way that they also meet All-University Core Curriculum requirements.

The ability to express oneself clearly and concisely in both written and oral forms is a great asset to the engineer who is often called upon to prepare reports in which clarity, organization, and precision are essential. For this reason, engineering students must do more than meet the minimum English course requirements. In fact, the development of communication skills is emphasized throughout the engineering curricula. This emphasis is especially evident in laboratory and design-oriented courses, in which the presentation of both oral and written reports is a major component.

The College of Engineering requires a minimum grade point average of 2.000 in required engineering, mathematics, chemistry, and physics courses as a graduation requirement. Additional minimum grade requirements apply in some engineering majors.

An engineer applies physical understanding and analytical techniques to the design of devices and systems needed by modern society. The preparation of an engineer, therefore, must include engineering design experience. To meet this objective, all undergraduate engineering students must participate in a well-structured sequence of design-related courses culminating in a capstone design experience in order to graduate.

### Graduate Programs in Biomedical Engineering

Programs leading to a Master of Engineering, Master of Science, and Doctor of Philosophy degrees are offered at CSU. The graduate programs in Bioengineering (M.S. and Ph.D.) integrate physical, chemical, and mathematical sciences with engineering principles and clinical studies. There are boundless opportunities for research, ranging from new therapies and imaging modalities for fighting cancer, to improving the design of vital medical equipment used in open heart surgery, or developing the next generation of gene therapies and engineered tissues. At CSU we are uniquely positioned to offer this advanced degree program. The highly-ranked Veterinary Medical Center and the Professional Veterinary Medicine Program are co-located with engineering and sciences on the CSU campus, providing a rich environment for interdisciplinary research and day-to-day collaborations.

### Other Graduate Programs under the College of Engineering

The College of Engineering also offers an M.S. and a Ph.D. in Systems Engineering, as well as graduate level interdisciplinary studies programs in Extreme Ultraviolet and Optical Science and Technology, and Systems Engineering. Students interested in graduate work should refer to the Graduate and Professional Bulletin.

### Major in Engineering Science

Scott Bioengineering Building, Room 102  
(970) 491-6220

Professor Anthony Marchese, Program Chair  
Laurie Craig, Undergraduate Key Advisor

Engineering Science is an interdisciplinary major that allows students to acquire a strong base in mathematics, the physical sciences, and engineering fundamentals while pursuing a broad background in the liberal arts or other areas of interest in preparation for specialized careers or graduate studies. The major provides comprehensive undergraduate engineering education in selected fields which are not served by traditional engineering programs available at CSU. Three concentrations are available—Engineering Physics, Space Engineering, Teacher Education, and the dual-degree programs in Engineering and the College of Liberal Arts. Regardless of the concentration, graduates are well prepared for a professional career.

### Program Educational Objectives

The Engineering Science Program seeks to develop graduates who will be able to do the following within the first few years after graduation:

- Define, analyze, formulate, and synthesize engineering problems associated with their professional position, both independently and in diverse, multidisciplinary and interdisciplinary team environments
- Actively contribute to multifaceted and multidisciplinary projects with significant legal, ethical, regulatory, social, cultural, environmental, and economic considerations using a broad systems perspective
- Communicate effectively with colleagues, professional clients, and the public
- Demonstrate commitment and progress in lifelong learning including further graduate education, professional development including active participation in professional societies, and leadership positions
- Actively participate in innovative and entrepreneurial related projects

### Student Learning Outcomes

At graduation, CSU Engineering Science undergraduates are expected to have:

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multidisciplinary teams
- An ability to identify, formulate, and solve engineering problems
- An ability to understand professional and ethical responsibilities
- An ability to use the techniques, skills, and modern engineering, as well as the tools necessary for engineering practice; and communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- A recognition of the need for, and an ability to engage in life-long learning
- Knowledge of contemporary issues
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
The Engineering Science major and each of its concentrations is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

**Potential Occupations**

Engineering Science graduates are well rounded in mathematics, sciences, humanities, and social and behavioral sciences. They are well prepared to enter a career in engineering, or to proceed to graduate school in one of the traditional engineering disciplines. Graduates of the Liberal Arts/Engineering Science dual major often move on to professional programs in medicine, law, veterinary medicine, or business. Moreover, these graduates are suited for a broad range of occupations in addition to engineering. Participation in internships or volunteer activities is highly recommended to enhance practical training and development. Graduates who continue on with advanced studies can attain more responsible positions with the possibility of rising to top professional levels. Some examples include: space engineer, solid-state electronics engineer, and aerospace engineer.

**Concentrations**

- Engineering Physics Concentration

**Dual Degree Programs**

See the College of Liberal Arts for information on dual degree opportunities.

**Major in Engineering Science, Engineering Physics Concentration**

The Engineering Physics concentration prepares students to work in high technology areas in which solid engineering training, combined with a broader background in physics is valuable. Through the appropriate choice of technical electives, students can specialize in modern laser physics, energy engineering, solid-state electronics, or energy conversion. The technical electives are chosen predominantly from the Departments of Electrical and Computer Engineering and Mechanical Engineering in the College of Engineering and the Departments of Computer Science, Mathematics, and Physics in the College of Natural Sciences.

**Requirements**

**Effective Spring 2015**

To qualify for graduation, Engineering Science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

**Freshman**

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**Additional Requirements for Graduation**

Total Credits 31

**Sophomore**

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**Additional Requirements for Graduation**

Total Credits 33
### Major Completion Map

**Distinctive Requirements for Degree Program:**

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

---

**Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.**

**Mathematics elective (300 level or higher). Select course with advisor’s approval.**

**Select courses with advisor’s approval.**

---

### Freshman

#### Semester 1

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**Sophomore**

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</table>
Major in Engineering Science, Space Engineering Concentration

The Space Engineering concentration provides students with a broad background in aerospace and space engineering. The curriculum is based on a solid foundation of engineering disciplines and applied mathematics.

Requirements

Effective Spring 2015

To qualify for graduation, Engineering Science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.

Freshman

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Total Credits: 30

Sophomore

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### Junior

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### Senior

Select one group from the following: 6-8

**Group A:**
- CIVE 402²: Senior Design Principles
- CIVE 403: Senior Project Design

**Group B:**
- MECH 486A²: Engineering Design Practicum: I
- MECH 486B: Engineering Design Practicum: II
- MECH 402 or STAT 315: Mechanical Engineering Experimental Analysis
- Statistics for Engineers and Scientists

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Program Total Credits: 137

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1. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student's four-year program.

2. Space engineering students will need to obtain a registration override from the appropriate department to take this course.

3. Select courses with advisor's approval.

---

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1#2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four#year program.

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### Junior

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Major in Engineering Science, Teacher Education Concentration

The Engineering Science Teacher Education concentration provides students with the engineering and teaching experience to enter junior and senior high school classrooms and laboratories to teach engineering design principles and concepts in an exciting technology education classroom.

Detailed information about the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and licensure requirements can be found in the Education Building, Room 111.

Requirements

Effective Fall 2014

To qualify for graduation, Engineering Science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives.
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**Total Credits**: 33

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**Additional Requirements for Graduation¹**

**Total Credits**: 33

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| Technical Electives 4 | | | 7 |

**Additional Requirements for Graduation¹**

**Total Credits**: 30
Senior

Select one group from the following: 6-8

Group A:
- CIVE 402 \(^3\) Senior Design Principles
- CIVE 403 Senior Project Design 4C

Group B:
- MECH 486A \(^3\) Engineering Design Practicum: I 4C
- MECH 486B Engineering Design Practicum: II 4C

EDCT 465 Methods and Materials in Technology Education 3
EDUC 450 Instruction II-Standards and Assessment 4
EDUC 486E Practicum: Instruction II 1
MECH 325 Machine Design 3
CO 300 or JTC 300 Writing Arguments (GT-CO3) 2
Professional and Technical Communication (GT-CO3) 3

Additional Requirements for Graduation\(^1\) 0

Total Credits 29-31

Fifth Year

EDCT 492 Seminar-Professional Relations 1
EDUC 485B or EDCT 485 Student Teaching: Secondary 11
Student Teaching

Additional Requirements for Graduation\(^1\) 0

Total Credits 12

Program Total Credits: 137-140

\(^1\) Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

\(^2\) Students who do not take the MECH sequence in the freshman year may need to get a registration override from the Department of Mechanical Engineering to register for this course.

\(^3\) Students will need to obtain a registration override from the appropriate department to take this course.

\(^4\) If planning to take MECH 486A and MECH 486B in the senior year, take MECH 302 and MECH 331; otherwise select courses with advisor’s approval.

Major Completion Map

Distinctive Requirements for Degree Program:
TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at Colorado State in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

Freshman

Semester 1  Critical  Recommended  AUCC  Credits 3-4

Select one course from the following:
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<td>Mechanical Engineering Problem Solving</td>
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**Total Credits: 15-16**

**Semester 2**

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**Total Credits: 18**

**Sophomore**

**Semester 3**

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**Total Credits: 17**

**Semester 4**

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**Total Credits: 16**

**Junior**

**Semester 5**

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**Total Credits: 16**

**Semester 6**

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<td>Instruction I-Individualization/Management</td>
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**Total Credits: 16**
EDUC 386  Practicum-Instruction I  X  1
STAT 315  Statistics for Engineers and Scientists  X  3
Technical Electives (See List on Concentration Requirements Tab)  X  4
PLI Workshop(s)  X  

Total Credits  14

**Senior**

**Semester 7**

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Select one course from the following:

CIVE 402  Senior Design Principles  X  3-4
MECH 486A  Engineering Design Practicum: I  X  4C

Select one course from the following:

CO 300  Writing Arguments (GT-CO3)  2
JTC 300  Professional and Technical Communication (GT-CO3)  2
EDCT 465  Methods and Materials in Technology Education  X  3
MECH 325  Machine Design  X  3

Global and Cultural Awareness  3E  3

PLI Workshop(s)  X

Total Credits  15-16

**Semester 8**

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Select one course from the following:

CIVE 403  Senior Design Project Design  X  3-4
MECH 486B  Engineering Design Practicum: II  X  4C
EDUC 450  Instruction II-Standards and Assessment  X  4
EDUC 486E  Practicum: Instruction II  X  1

Historical Perspectives  3D  3
Social and Behavioral Sciences  3C  3

PLI Workshop(s)  X

Total Credits  14-15

**Semester 9**

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<td></td>
<td>EDUC 485B  Student Teaching: Secondary</td>
<td></td>
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<tr>
<td></td>
<td>EDCT 492  Seminar-Professional Relations</td>
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<tr>
<td></td>
<td><strong>Foundation Courses</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>BIOM 525/MECH 525  Cell and Tissue Engineering</td>
<td></td>
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<tr>
<td></td>
<td>BIOM 526/MECH 526  Biological Physics</td>
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<tr>
<td></td>
<td>BIOM 531/MECH 531  Materials Engineering</td>
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<tr>
<td></td>
<td>BIOM 532/MECH 532  Material Issues in Mechanical Design</td>
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<tr>
<td></td>
<td>BIOM 533  Biomolecular Tools for Engineers</td>
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</tr>
<tr>
<td></td>
<td>or CIVE 534  Applied and Environmental Molecular Biology</td>
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</tr>
<tr>
<td></td>
<td>BIOM 543/ CBE 543  Membranes for Biotechnology and Biomedicine</td>
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</tr>
</tbody>
</table>

Select one course from the following:

EDCT 485  Student Teaching  X  11
EDUC 485B  Student Teaching: Secondary  X
EDCT 492  Seminar-Professional Relations  X  1

The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

Total Credits  12

Program Total Credits:  137-140

---

**Master of Engineering, Plan C, Biomedical Engineering Specialization**

**Requirements Effective Spring 2012**

Students must take a minimum of 15 semester credits of biomedical engineering (BIOM) courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOM 570/MECH 570  Bioengineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BMS 500  Mammalian Physiology I</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Foundation Courses**

Select a minimum of 12 credits from the following:

BIOM 525/MECH 525  Cell and Tissue Engineering
BIOM 526/MECH 526  Biological Physics
BIOM 531/MECH 531  Materials Engineering
BIOM 532/MECH 532  Material Issues in Mechanical Design
BIOM 533  Biomolecular Tools for Engineers
or CIVE 534  Applied and Environmental Molecular Biology
BIOM 543/ CBE 543  Membranes for Biotechnology and Biomedicine
Master of Engineering, Plan C, Engineering Management Specialization

Requirements
Effective Spring 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Courses</strong></td>
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</tr>
<tr>
<td></td>
<td>Select one course from the following:</td>
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</tr>
<tr>
<td></td>
<td>CIS 600 Information Technology and Project Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CIS 670 Advanced IT Project Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MECH 501 Engineering Project and Program Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENGR 501 Foundations of Systems Engineering</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ENGR 530 Overview of Systems Engineering Processes</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ENGR 531 Engineering Risk Analysis</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Courses in Depth</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select three courses from the following:</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>CIS 610 Software Development Methodology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENGR 510 Engineering Optimization: Method/Application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENGR 520 Engineering Decision Support/Expert Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENGR 532/ECE 532 Dynamics of Complex Engineering Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENGR 565/ECE 565 Electrical Power Engineering</td>
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</tr>
<tr>
<td></td>
<td>ENGR 567 Systems Engineering Architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MECH 513 Simulation Modeling and Experimentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENGR 597 Group Study in Systems Engineering</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Electives</strong></td>
<td></td>
</tr>
</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1 Additional courses may need to be taken as supplemental requirements to satisfy provisional admission requirements, course prerequisites, or supplemental coursework stipulations.

2 Students with a strong background in Cellular and Molecular Biology may substitute CM 592 for BIOM 533 or CIVE 534.

Seminar, thesis, and independent study credits will not apply toward degree.
Electives 2 6
Total Credits 30

A minimum of 30 credits are required to complete this program.

1 Complete ENGR 597 or select a comparable course with a minimum of 3 credits with approval of graduate advisor.

2 400 level or above regular course credits consistent with the student’s program of study

NOTE: One course cannot satisfy multiple requirements.

Master of Science in Systems Engineering, Plan A

Requirements
Effective Spring 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 5 courses from the following:</td>
<td>15</td>
</tr>
<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
<td></td>
</tr>
<tr>
<td>or CIS 670</td>
<td>Advanced IT Project Management</td>
<td></td>
</tr>
<tr>
<td>or MECH 501</td>
<td>Engineering Project and Program Management</td>
<td></td>
</tr>
<tr>
<td>ENGR 501</td>
<td>Foundations of Systems Engineering</td>
<td></td>
</tr>
<tr>
<td>ENGR 530</td>
<td>Overview of Systems Engineering Processes</td>
<td></td>
</tr>
<tr>
<td>ENGR 531</td>
<td>Engineering Risk Analysis</td>
<td></td>
</tr>
<tr>
<td>ECE 532/ENGR 532</td>
<td>Dynamics of Complex Engineering Systems</td>
<td></td>
</tr>
<tr>
<td>ECE 565/ENGR 565</td>
<td>Electrical Power Engineering</td>
<td></td>
</tr>
<tr>
<td>ECE 566</td>
<td>Grid Integration of Wind Energy Systems</td>
<td></td>
</tr>
<tr>
<td>ENGR 567</td>
<td>Systems Engineering Architecture</td>
<td></td>
</tr>
<tr>
<td>ENGR 510</td>
<td>Engineering Optimization: Method/Application</td>
<td></td>
</tr>
<tr>
<td>ENGR 520</td>
<td>Engineering Decision Support/Expert Systems</td>
<td></td>
</tr>
<tr>
<td>MECH 513</td>
<td>Simulation Modeling and Experimentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical Electives 1</td>
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</tr>
<tr>
<td>ENGR 699</td>
<td>Thesis</td>
<td>9</td>
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<tr>
<td></td>
<td>Total Credits</td>
<td>30</td>
</tr>
</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1 Select 6 credits with approval by student’s advisory committee. A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

Master of Science in Systems Engineering, Plan B

Requirements
Effective Spring 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select 5 courses from the following:</td>
<td>15</td>
</tr>
<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
<td></td>
</tr>
<tr>
<td>or CIS 670</td>
<td>Advanced IT Project Management</td>
<td></td>
</tr>
<tr>
<td>or MECH 501</td>
<td>Engineering Project and Program Management</td>
<td></td>
</tr>
<tr>
<td>ENGR 501</td>
<td>Foundations of Systems Engineering</td>
<td></td>
</tr>
<tr>
<td>ENGR 530</td>
<td>Overview of Systems Engineering Processes</td>
<td></td>
</tr>
<tr>
<td>ENGR 531</td>
<td>Engineering Risk Analysis</td>
<td></td>
</tr>
<tr>
<td>ECE 532/ENGR 532</td>
<td>Dynamics of Complex Engineering Systems</td>
<td></td>
</tr>
<tr>
<td>ECE 565/ENGR 565</td>
<td>Electrical Power Engineering</td>
<td></td>
</tr>
<tr>
<td>ECE 566</td>
<td>Grid Integration of Wind Energy Systems</td>
<td></td>
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<tr>
<td>ENGR 567</td>
<td>Systems Engineering Architecture</td>
<td></td>
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<tr>
<td>ENGR 510</td>
<td>Engineering Optimization: Method/Application</td>
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<tr>
<td>ENGR 520</td>
<td>Engineering Decision Support/Expert Systems</td>
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</tr>
<tr>
<td>MECH 513</td>
<td>Simulation Modeling and Experimentation</td>
<td></td>
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<tr>
<td></td>
<td>Technical Electives 1</td>
<td></td>
</tr>
<tr>
<td>ENGR 695</td>
<td>Independent Study 2</td>
<td>3</td>
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<tr>
<td></td>
<td>Total Credits</td>
<td>30</td>
</tr>
</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1 Select 6 credits with approval by student’s advisory committee. A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

2 Complete ENGR 695 or select a comparable course with a minimum of 3 credits with approval of graduate advisor.

Ph.D. in Systems Engineering

Requirements
Effective Summer 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements</td>
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</tr>
<tr>
<td></td>
<td>Select 7 courses from the following:</td>
<td>21</td>
</tr>
<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
<td></td>
</tr>
<tr>
<td>or CIS 670</td>
<td>Advanced IT Project Management</td>
<td></td>
</tr>
<tr>
<td>or MECH 501</td>
<td>Engineering Project and Program Management</td>
<td></td>
</tr>
<tr>
<td>ENGR 501</td>
<td>Foundations of Systems Engineering</td>
<td></td>
</tr>
</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1 Select 6 credits with approval by student’s advisory committee. A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

2 Complete ENGR 695 or select a comparable course with a minimum of 3 credits with approval of graduate advisor.
**Graduate Programs in Atmospheric Science**

The department offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees in Atmospheric Science. Since the graduate degrees are primarily research degrees, the specialization opportunities for students generally reflect the research interests and expertise of the academic faculty. The academic curriculum and research training for atmospheric science graduate students are closely integrated. Graduates of the program typically find employment in government research laboratories, academic institutions, military services, and private industry. Students with a baccalaureate degree in mathematics, the natural sciences, or engineering are encouraged to apply for admission.

For additional information on graduate programs and the application process, please visit the Department of Atmospheric Science (http://atmos.colostate.edu/dept/research.php) website, Application Overview (http://www.atmos.colostate.edu/gradprog/admission.php), and Atmospheric Science Graduate Student Guide (http://www.atmos.colostate.edu/gradprog/graduateGuide/toc.php).

**M.S. Program**

Students that complete the M.S. program will have acquired the knowledge and proficiency needed to seek employment in the field of atmospheric science. This knowledge and proficiency are gained through completion of a required core curriculum, elective graduate courses chosen from a wide selection of offerings, and by participation in scientific research with their advisors.

M.S. graduates are prepared for a wide choice of professionally satisfying work in private industry, the consulting field, and with many government agencies. Graduates of the M.S. program can also choose to continue their studies and research in the Ph.D. program. A student is eligible to seek admission to the Ph.D. program after successfully completing a thesis-based M.S. degree with a positive recommendation from their M.S. committee. Students holding thesis-based M.S. degrees from institutions other than CSU may be directly admitted into the Ph.D. program. These students follow the normal application procedures to our program.

In addition to meeting the formal credit requirements for the M.S., described below, all graduate students enrolled in the department are expected to attend the weekly department colloquium series. These colloquia are an important part of the total instructional program. Details can be found on the colloquium page (http://www.atmos.colostate.edu/dept/colloquia.php) on the ATS website.

**Prerequisites**

- Bachelor of Science (B.S.) degree in physics, math, atmospheric science, engineering, chemistry, or related field with a cumulative GPA of at least 3.0
- Calculus-based math course sequence including differential equations and vector analysis
- Calculus-based physics course sequence including kinetics, electricity and magnetism, and some modern topics

**Plan A (Thesis)**

A minimum of 30 semester credits plus thesis is required. At least 19 credits must be earned in structured academic courses. 11 credits may be earned in structured academic courses. 11 credits may be earned in structured academic courses. 11 credits may be earned in structured academic courses.

### Course Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 530</td>
<td>Overview of Systems Engineering Processes</td>
</tr>
<tr>
<td>ENGR 531</td>
<td>Engineering Risk Analysis</td>
</tr>
<tr>
<td>ECE 532/ENG 532</td>
<td>Dynamics of Complex Engineering Systems</td>
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<tr>
<td>ECE 565/ENG 565</td>
<td>Electrical Power Engineering</td>
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<td>ECE 566</td>
<td>Grid Integration of Wind Energy Systems</td>
</tr>
<tr>
<td>ENGR 567</td>
<td>Systems Engineering Architecture</td>
</tr>
<tr>
<td>ECE 568/ENG 568</td>
<td>Electrical Energy Generation Systems</td>
</tr>
<tr>
<td>ENGR 510</td>
<td>Engineering Optimization: Method/Application</td>
</tr>
<tr>
<td>ENGR 520</td>
<td>Engineering Decision Support/Expert Systems</td>
</tr>
<tr>
<td>ECE 621/ENG 621</td>
<td>Energy Storage for Electrical Power</td>
</tr>
<tr>
<td>ECE 622/ENG 622</td>
<td>Energy Networks and Power Distribution</td>
</tr>
<tr>
<td>MECH 513</td>
<td>Simulation Modeling and Experimentation</td>
</tr>
</tbody>
</table>

**Technical Electives**

5 credits must be earned in structured academic courses. 11 credits may be earned in structured academic courses. 11 credits may be earned in structured academic courses. 11 credits may be earned in structured academic courses.

**Research**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 799</td>
<td>Dissertation</td>
</tr>
</tbody>
</table>

Total Credits 72

A minimum of 72 credits are required to complete this program.

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**Department of Atmospheric Science**

Office in Atmospheric Science Building, Foothills Campus, Room 118 (970) 491-8682
www.atmos.colostate.edu (http://www.atmos.colostate.edu)

Professor Jeffrey L. Collett, Jr., Department Head
Professor Russ Schumacher, Graduate Student Counselor
Email: info@atmos.colostate.edu

**Undergraduate**

No undergraduate major is offered. Undergraduates interested in atmospheric science at the graduate level are encouraged to major in engineering, physics, chemistry, mathematics, or atmospheric science.
be in special studies, graduate seminars, and research (a maximum of six research credits is allowed). Of the total 30 credits, 20 must be Department of Atmospheric Science courses (i.e., courses with the ATS prefix).

All MS students must complete the following required courses (required courses account for 13 credit hours):

- ATS 601 Atmospheric Dynamics I (2 credits)
- ATS 606 Introduction to Climate (2 credits)
- ATS 620 Thermodynamics and cloud physics (2 credits)
- ATS 621 Atmospheric Chemistry (2 credits)
- ATS 622 Atmospheric Radiation (2 credits)
- ATS 693 Responsible Research in Atmospheric Science (1 credit)
- One of the following:
  - ATS 640 Introduction to synoptic dynamics (2 credits)
  - ATS 641 Introduction to mesoscale dynamics (2 credits)

All MS students must also complete 6 elective credit hours in structured classes. Electives may include any structured class at the 500/600 level. With written advisor approval, electives may also include structured 700 level classes and/or structured graduate courses in other departments. Audits do not count towards the MS degree.

A student may substitute a required class for an alternative course if:

1. A course similar to the required class has already been completed at the graduate level with a grade of B or higher
2. The student’s advisor, the department head, and the instructor of the required course approve the substitution in writing.

A student’s program of study, and any deviations therein from department degree requirements, requires department head approval.

ATS 784 does not count toward the 19 structured credits. ATS 699A-O and ATS 784 are graded as S/U.

**Ph.D. Program**

The department offers a Ph.D. program for students who want to obtain the highest academic degree available in the field of atmospheric science. Students who earn a Ph.D. must demonstrate significant intellectual achievement, high scholarly ability, and a great breadth of knowledge.

In addition to meeting the formal credit requirements for the Ph.D., described below, all graduate students enrolled in the department are expected to attend the weekly department colloquium series. These colloquia are an important part of the total instructional program. Details can be found on the colloquium page (http://www.atmos.colostate.edu/dept/colloquia.php) on the ATS website.

**Prerequisites**

- Successful completion of an M.S. degree with thesis in atmospheric science, physics, math, engineering, chemistry, or related field
- Demonstration of aptitude for research
- Successful completion of the department preliminary exam that includes background, methods, and current research that applies to the specific area(s) encompassing the candidate’s proposed research topic

**Course Requirements**

- Ph.D. students must take a minimum of 42 semester credits beyond the (thesis option) master’s degree (or 72 semester credits beyond the bachelor’s degree). At least 21 credits beyond the master’s degree (or 37 credits beyond the bachelor’s degree) must be earned in courses numbered 500 or above.
- Ph.D. students are required to take two structured courses per academic year. Students must register for the courses, and only one may be taken as an audit. The structured courses can be selected from the 500, 600, or 700 level. With written advisor approval, the courses may also include structured graduate classes from other departments. When the student is within one semester of graduation, the student and advisor may petition the Department Head, in writing, for a waiver of the “two courses per year” requirement. While ATS 784 (Supervised College Teaching) is not considered a structured academic course, it is allowed to count towards the two courses per academic year Ph.D. requirement.
- Successful completion of ATS 693 (1 cr), Responsible Conduct of Research, offered every spring semester.
- Audits count towards the department’s requirement that all GRA’s enroll for at least 15 credit hours each semester (section L). But audits do not count towards the total required course credits for the Ph.D., and may not be listed on the GS Form 6.

**Evaluation Mechanisms**

- Successful research topic proposal presentation
- Dissertation prepared under the mentorship of the student’s advisor and graduate committee that meets the following criteria: displays original and creative scholarship, contributes new knowledge to the field of atmospheric science, and expresses good literate style.
- Successful defense of a dissertation before the student’s graduate committee and any other members of the academic and scientific communities who desire to attend

The student’s Graduate Committee is charged with ensuring the student gains breadth in Atmospheric Science during his/her tenure in the program. Accordingly the Graduate Committee may make recommendations on coursework to be completed prior to graduation.

**Courses**

**Atmospheric Science (ATS)**

ATS 150 Science of Global Climate Change Credits: 3 (3-0-0)  
Course Description: Physical basis of climate change. Energy budget of the earth, the greenhouse effect, carbon cycle, paleoclimate, projections of 21st-century climate.  
Prerequisite: None.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 350 Introduction to Weather and Climate Credits: 2 (2-0-0)  
Course Description: Behavior of atmosphere and its influence upon human’s activities.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.
ATS 351  Introduction to Weather and Climate Laboratory  Credit:  1 (0-3-0)  
Course Description: Actual weather data, visualization of meteorological phenomena, in-depth discussion of current environmental issues.  
Prerequisite: ATS 350, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 495  Independent Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

ATS 543  Current Topics in Climate Change  Credits: 2 (2-0-0)  
Also Offered As: ESS 543.  
Course Description: Climate fundamentals and current topics in climate change.  
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.  
Registration Information: Credit not allowed for both ATS 543 and ESS 543. Sections may be offered: Online.  
Term Offered: Fall.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

ATS 555  Air Pollution  Credits: 3 (3-0-0)  
Course Description: Nature, ambient concentrations, sources, sinks, and physiological activities of pollutants; meteorology; legislation; social and economic factors.  
Prerequisite: (CHEM 113) and (MATH 261 or MATH 340) and (PH 122 or PH 142).  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 560  Air Pollution Measurement  Credits: 2 (1-3-0)  
Course Description: Examination and application of techniques for air pollution measurement. Includes sampling and analysis of gases, aerosols, and precipitation.  
Prerequisite: CHEM 114.  
Registration Information: Must register for lecture and laboratory.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 601  Atmospheric Dynamics I  Credits: 2 (2-0-0)  
Course Description: Equations of motion; earth’s rotation; balanced motion; vorticity and Rossby waves; shallow water models; potential vorticity.  
Prerequisite: MATH 261 and MATH 530.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 602  Atmospheric Dynamics II  Credits: 2 (2-0-0)  
Course Description: Sound waves, gravity waves, Rossby waves; numerical weather prediction; baroclinic instability; general circulation; tropical dynamics.  
Prerequisite: ATS 601.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 604  Atmospheric Modeling  Credits: 3 (3-0-0)  
Course Description: Design of numerical models of the atmosphere; applications to current problems. Emphasis on practical understanding of relevant numerical methods.  
Prerequisite: ATS 601.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 605  Atmospheric Circulations  Credits: 3 (3-0-0)  
Course Description: Observations and theory of the general circulation of the atmosphere, with emphasis on understanding physical mechanisms.  
Prerequisite: ATS 602, may be taken concurrently.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 606  Introduction to Climate  Credits: 2 (2-0-0)  
Course Description: Global energy balance, surface energy balance, the hydrological cycle, atmosphere general circulation, ocean general circulation, climate variability, climate sensitivity and feedbacks.  
Prerequisite: MATH 261 and MATH 530.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 607  Computational Methods for Atmospheric Science  Credits: 3 (3-0-0)  
Course Description: Computer programming tools unique to and common in the atmospheric sciences.  
Prerequisite: ATS 601, may be taken concurrently.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ATS 610  Physical Oceanography  Credits: 3 (3-0-0)  
Course Description: Foundations of ocean circulation theory and the general circulation of the oceans using observational data and rotating tank experiments.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.
ATS 620 Thermodynamics and Cloud Physics Credits: 2 (2-0-0)
Course Description: Equilibrium thermodynamics, cloud microphysics, precipitation formation, and cloud electrification.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 621 Atmospheric Chemistry Credits: 2 (2-0-0)
Course Description: Overview of chemical kinetics and equilibria; sources and sinks of pollutants; photochemistry and smog formation; aqueous-phase chemistry; acid rain.
Prerequisite: CHEM 114 and MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 622 Atmospheric Radiation Credits: 2 (2-0-0)
Course Description: Role of radiation in the energy balance of the climate system; Absorption and scattering of solar radiation; Emission and absorption of terrestrial radiation; Interactions of radiation with clouds and aerosols; Role of radiative active trace gases.
Prerequisite: ATS 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 623 Atmospheric Boundary Layer Credits: 2 (2-0-0)
Course Description: Equations for shallow atmospheric motions; thermal instability of a fluid layer; atmospheric turbulence; flow stability; 1-D mixed layer models.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 631 Introduction to Atmospheric Aerosols Credits: 2 (1-3-0)
Course Description: Physical, chemical and microphysical characteristics of atmospheric particulate matter; measurement principles and techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 640 Synoptic Meteorology Credits: 2 (1-2-0)
Course Description: Synoptic-scale weather systems; thermodynamic diagrams; vertical motion; fronts; cyclones and anticyclones.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 641 Mesoscale Meteorology Credits: 2 (1-2-0)
Course Description: Mesoscale weather systems; instabilities; orographic flows; dynamics of convective storms; organized convection.
Prerequisite: ATS 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 650 Measurement Systems and Theory Credits: 2 (2-0-0)
Course Description: Surface and upper air measurement systems; theory and system response, sensor design; automated data collection, analysis and display systems.
Prerequisite: PH 142 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 652 Atmospheric Remote Sensing Credits: 2 (2-0-0)
Course Description: Concepts of electromagnetic and acoustic wave propagation; active and passive remote sensing techniques including radar, lidar, thermal emission systems.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 655 Objective Analysis in Atmospheric Sciences Credits: 3 (3-0-0)
Course Description: Objective analysis of geophysical data: general statistics; matrix methods; time series analysis. Emphasis on applications to real-world data.
Prerequisite: ATS 601 or MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 662 Inversion Theory Credits: 3 (2-0-1)
Course Description: Matrix methods; time series analysis. Emphasis on applications to real-world data.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 693 Responsible Research in Atmospheric Science Credit: 1 (0-0-1)
Course Description: Scientific misconduct; ethical publishing; record keeping; data management; professional skills applicable to atmospheric science.
Prerequisite: None.
Registration Information: Must be admitted to Atmospheric Science degree program.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 695A Independent Study: Atmosphere/Ocean Coupling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
### ATS 695B Independent Study: Atmospheric Science Topics
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.

### ATS 699A Thesis: Atmospheric Dynamics
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Restriction:** Must be a: Graduate, Professional.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.

### ATS 699B Thesis: Land-Atmosphere Interactions
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Restriction:** Must be a: Graduate, Professional.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.

### ATS 699C Thesis: Chemistry-Climate Interactions
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Restriction:** Must be a: Graduate, Professional.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.

### ATS 699D Thesis: Weather Systems
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Restriction:** Must be a: Graduate, Professional.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.

### ATS 699E Thesis: Remote Sensing
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Restriction:** Must be a: Graduate, Professional.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.

### ATS 699F Thesis: Ocean-Atmosphere Interactions
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Restriction:** Must be a: Graduate, Professional.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.

### ATS 699G Thesis: General Circulation
- **Credits:** Var[1-18] (0-0-0)
- **Course Description:**
- **Prerequisite:** None.
- **Restriction:** Must be a: Graduate, Professional.
- **Terms Offered:** Fall, Spring, Summer.
- **Grade Mode:** Instructor Option.
- **Special Course Fee:** No.
ATS 699P Thesis: Radiation Theory Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699Q Thesis: Radar Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699R Thesis: Aerosol and Cloud Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699S Thesis: Climate Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 699U Thesis: Tropospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699V Thesis: Atmospheric Variability Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 703 Numerical Weather Prediction Credits: 2 (2-0-0)
Course Description: Quasi-geostrophic approximation; barotropic, baroclinic, primitive equation, and general circulation models; numerical methods.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 704 Large-Scale Atmospheric Dynamics Credits: 2 (2-0-0)
Course Description: Quasi-static, quasi-geostrophic equations; planetary waves; geostrophic adjustment; barotropic, baroclinic instability; frontogenesis; tropical cyclones.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 707 Atmospheric Waves and Vortices Credits: 3 (2-0-1)
Course Description: Atmospheric wave motions and embedded vortices spanning mountain waves to large-scale Rossby waves and critical layers.
Prerequisite: ATS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 708 Middle Atmospheric Dynamics Credits: 3 (3-0-0)
Course Description: Dynamics of the stratosphere and mesosphere with emphasis on the lower and middle stratosphere.
Prerequisite: ATS 602.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 710 Geophysical Vortices Credits: 3 (3-0-0)
Course Description: Observational, experimental, and theoretical aspects of geophysical vortices, such as hurricanes, polar lows, tornadoes, and dust devils.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 711 Microclimate Credits: 2 (2-0-0)
Course Description: Momentum, heat, water, and trace gas fluxes near the earth’s surface, including fluxes between the atmosphere and the land/ocean/ice surfaces.
Prerequisite: MATH 340 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ATS 712 Dynamics of Clouds  Credits: 3 (3-0-0)
Course Description: General theory of cloud dynamics; parameterization of microphysics and radiation; models of fog, stratocumuli, cumulonimbi, and orographic clouds.
Prerequisite: ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 715 Atmospheric Oxidation Processes  Credits: 2 (2-0-0)
Course Description: Atmospheric hydrocarbon and nitrogen oxide reactions; aqueous phase scavenging and reactions; chemical pathways in the atmosphere.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 716 Air Quality Characterization  Credits: 2 (1-2-0)
Course Description: Planning, executing, and reporting on a measurement campaign to characterize local air quality.
Prerequisite: (ATS 560) and (ATS 555 or ATS 621).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 721 Theoretical Topics in Radiative Transfer  Credits: 3 (3-0-0)
Course Description: Physics of atmospheric radiation; theoretical techniques used to show radiation transfer equation.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 722 Atmospheric Radiation and Energetics  Credits: 3 (2-0-1)
Course Description: Radiative transfer in the atmosphere; implications on remote sensing and energetics.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 724 Cloud Microphysics  Credits: 2 (2-0-0)
Course Description: Theories and observations of nucleation; cloud droplet spectrums broadening; precipitation growth and breakup; ice multiplication; cloud electrification.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 720 Mesoscale Modeling  Credits: 3 (3-0-0)
Course Description: Development of basic equations used in mesoscale models and methodology of solution
Prerequisite: ATS 602 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 725 Mesoscale Dynamics  Credits: 3 (3-0-0)
Course Description: Analysis of physical and dynamical processes that initiate, maintain, and modulate atmospheric mesoscale phenomena.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 727 Satellite Observation of Atmosphere and Earth  Credits: 3 (3-0-0)
Course Description: Satellite measurements; basic orbits and observing systems; applications of remote probing and imaging to investigations of atmospheric processes.
Prerequisite: ATS 622 and ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 730 Radar Meteorology  Credits: 3 (3-0-0)
Course Description: Radar systems; radar equation and applications; multiple Doppler observation and processing; radar studies of mesoscale systems.
Prerequisite: ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 731 Tropical Meteorology  Credits: 2 (2-0-0)
Course Description: Overview of the tropical atmosphere, monsoons, intraseasonal variability, hurricanes, theory of tropical convection and the large-scale circulation.
Prerequisite: ATS 601 and ATS 602 and ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 734 Interactions of the Ocean and Atmosphere  Credits: 3 (3-0-0)
Course Description: Ocean-atmosphere interactions in observations, theory, and models. Time mean atmosphere-ocean circulations through climate variability and change.
Prerequisite: ATS 602.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ATS 745  Atmospheric General Circulation Modeling  Credits: 3 (3-0-0)
Course Description: Current problems in modeling of the general circulation of the atmosphere.
Prerequisite: ATS 602 and ATS 605.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 750  Climate Dynamics: Atmospheric Variability  Credits: 3 (3-0-0)
Course Description: Analysis and interpretation of large-scale patterns of climate variability and observed climate change.
Prerequisite: ATS 605 and ATS 655.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 752  Inverse Methods in Atmospheric Science  Credits: 2 (2-0-0)
Course Description: Introduction to inverse modeling, with particular application to remote sensing retrievals, flux inversions and data assimilation.
Prerequisite: None.
Registration Information: Ph.D. standing in Atmospheric Science required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 753  Global Hydrologic Cycle  Credits: 3 (3-0-0)
Course Description: Hydrologic cycle, moisture transport and air-ground exchange; water budgets of meteorological phenomena; climatology of atmospheric water.
Prerequisite: (ATS 601) and (ATS 622 or ATS 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 755  Theoretical and Applied Climatology  Credits: 3 (3-0-0)
Course Description: Current topics in climate research.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 760  Global Carbon Cycle  Credits: 2 (2-0-0)
Course Description: Exchanges of CO2 between the atmosphere, the land surface, and oceans. Biogeochemical processes. Micrometeorological and inverse flux estimation.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 761  Land-Atmosphere Interactions  Credits: 2 (2-0-0)
Course Description: Exchange of energy, water, momentum, and carbon between the land surface and the atmosphere.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 762  Biosphere-Chemistry-Climate Interactions  Credits: 2 (2-0-0)
Course Description: Explore the sensitivity of the climate system to atmospheric chemical composition with emphasis on connections to biospheric processes and feedbacks.
Prerequisite: ATS 621.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 765  Climate Dynamics-Ocean Variability  Credits: 3 (3-0-0)
Course Description: Climate variability on time scales of years to millennia with focus on the role of the ocean circulation. Approach through dynamical systems theory.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 770  Ocean Modeling  Credits: 3 (3-0-0)
Course Description: Conceptual and numerical ocean models and their application to current problems in climate science and biogeochemical cycles.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 772  Aerosol Chemistry  Credits: 2 (2-0-0)
Course Description: Physics and chemistry of atmospheric aerosols including composition, surface properties, size, interaction with radiation sources, sinks.
Prerequisite: (CHEM 114 and MATH 161) and (PH 122 or PH 142).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 784  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: Instructor Option.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 786  Practicum  Credits: Var[1-18] (0-0-0)
Course Description: Instructor Option.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: Instructor Option.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ATS 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799A Dissertation: Atmospheric Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799B Dissertation: Land-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799C Dissertation: Chemistry-Climate Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799D Dissertation: Weather Systems Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799E Dissertation: Remote Sensing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799F Dissertation: Ocean-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799G Dissertation: General Circulation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799H Dissertation: Remote Sensing of Climate Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799I Dissertation: Atmospheric Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799J Dissertation: Aerosol and Cloud Microphysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799K Dissertation: Dynamic Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799L Dissertation: Satellite Applications Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799M Dissertation: Mesoscale Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799N Dissertation: Dynamics and Physics of Clouds Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ATS 799O  Dissertation: Mesoscale Modeling  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799P  Dissertation: Radiation Theory  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799Q  Dissertation: Radar Meteorology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799R  Dissertation: Aerosol and Cloud Chemistry  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799S  Dissertation: Climate Dynamics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799T  Dissertation: Chemistry in the Atmosphere-Earth Systems  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 799U  Dissertation: Tropospheric Chemistry  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799V  Dissertation: Atmospheric Variability  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

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cbe.colostate.edu (http://cbe.colostate.edu)

Professor David S. Dandy, Department Head

Undergraduate

Majors

- Major in Chemical and Biological Engineering
- Major in Biomedical Engineering and Chemical and Biological Engineering

Graduate

Graduate Programs in Chemical and Biological Engineering

The department offers graduate programs leading to Master of Engineering, Master of Science, and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin or the Department of Chemical and Biological Engineering (http://www.engr.colostate.edu/cheme/pages/fs_graduate_program.html).

Master Programs

- Master of Science in Chemical Engineering, Plan A*
- Master of Science in Chemical Engineering, Plan B*
- Master of Engineering, Plan C, Chemical Engineering Specialization*

Ph.D.

Ph.D. in Chemical Engineering*

* Please see department for program of study.
Courses

Chemical and Biological Engineering (CBE)

CBE 101 Chemical and Biological Engineering I Credits: 3 (2-2-0)
Course Description: Engineering design and problem solving; technical presentation skills; basic computer programming.
Prerequisite: CBE 160, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 102 Chemical and Biological Engineering II Credits: 3 (2-2-0)
Course Description: Applications of engineering design and problem solving; computer programming to solve engineering problems; team project.
Prerequisite: CBE 101.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 160 MATLAB for Chemical and Biological Eng Credit: 1 (0-2-0)
Course Description: Introduction to MATLAB programming for Chemical and Biological Engineering applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 201 Material and Energy Balances Credits: 3 (3-0-0)
Course Description: Principles of chemistry, physics, and mathematics applied to development of material and energy balances; illustration of concepts.
Prerequisite: (CBE 101 or CBE 160, may be taken concurrently or MATH 151, may be taken concurrently) and (LIFE 102, may be taken concurrently and CHEM 111 and PH 141, may be taken concurrently).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 205 Introduction to Biological Engineering Credits: 3 (3-0-0)
Course Description: Introduction to the application of the principles of engineering and biology to the analysis, design, and optimization of bioprocesses.
Prerequisite: CBE 101 and CBE 160 and LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 210 Thermodynamic Process Analysis Credits: 3 (3-0-0)
Course Description: Thermodynamic fundamentals and applications to ideal and non-ideal mixtures, power cycles, and chemical equilibria.
Prerequisite: CBE 201 with a minimum grade of C and MATH 261, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

CBE 210 Molecular Concepts and Applications Credits: 3 (3-0-0)
Course Description: Application of modern molecular theory to chemical and biological engineering problems in thermodynamics, chemical kinetics, and transport phenomena.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 230 Chemical and Biological Reactor Design Credits: 3 (3-0-0)
Course Description: Mechanisms and rates of chemical reactions; design of homogeneous and heterogeneous reactors; biological reactions and reactors.
Prerequisite: CBE 310 with a minimum grade of C and CBE 330 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 330 Process Simulation Credits: 3 (3-0-0)
Course Description: Analysis of chemical and biological engineering problems by numerical simulation.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 331 Momentum Transfer and Mechanical Separations Credits: 3 (3-0-0)
Course Description: Fluid properties; conservation equations; compressible and incompressible flow; pumping and metering; mixing; separation of fluid-solid mixtures.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 332 Heat and Mass Transfer Fundamentals Credits: 3 (3-0-0)
Course Description: Thermal processes; steady and unsteady conduction; convective heat transfer; radiation; heat exchanger design; mass transfer by diffusion and convection.
Prerequisite: CBE 330 with a minimum grade of C and CBE 331 with a minimum grade of C and CBE 310 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 333 Chemical and Biological Engineering Lab I Credits: 2 (0-5-0)
Course Description: Laboratory experiments involving material balances, thermodynamics, and momentum and heat transfer. Data analysis; written and oral reports.
Prerequisite: CBE 332, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

CBE 406 Introduction to Transport Phenomena Credits: 3 (3-0-0)
Course Description: Fundamental treatment of momentum and mass transport processes; dimensional analysis for parameter identification and order of magnitude estimation.
Prerequisite: CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CBE 430 Process Control and Instrumentation Credits: 3 (3-0-0)
Course Description: Measurement and control of process variables; transient chemical and biological processes; feedback, feedforward, and computer control concepts.
Prerequisite: CBE 320 with a minimum grade of C and CBE 442 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 439 Environmental Engineering Chemical Concepts Credits: 3 (2-3-0)
Also Offered As: CIVE 439.
Course Description: Application of chemical principles to environmental engineering problems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 439 and CIVE 439.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 442 Separation Processes Credits: 4 (4-0-0)
Course Description: Analysis of chemical and biological separations based on thermodynamics, diffusion, and convective mass transfer; design of separations equipment.
Prerequisite: CBE 332 with a minimum grade of C.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 443 Chemical and Biological Engineering Lab II Credits: 2 (0-5-0)
Course Description: Laboratory experiments involving advanced chemical and biological engineering concepts. Data analysis; written and oral reports.
Prerequisite: CBE 442, may be taken concurrently or ENVE 442, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CBE 451 Chemical and Biological Engineering Design I Credits: 3 (3-0-0)
Course Description: Chemical and biological process synthesis and simulation; engineering economics principles.
Prerequisite: CBE 442, may be taken concurrently and CBE 320 with a minimum grade of C.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 452 Chemical and Biological Engineering Design II Credits: 3 (2-2-0)
Course Description: Projects requiring students to design a chemical and/or biological process with cost estimation and constraint analysis; written and oral reports.
Prerequisite: CBE 451 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 493 Professional Development Seminar Credit: 1 (0-0-1)
Course Description: Topics in engineering professional development, including ethics, role of engineers in society, and life-long learning.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 501 Chemical Engineering Thermodynamics Credits: 3 (3-0-0)
Course Description: Definition, correlation, and estimation of thermodynamic properties; nonideal chemical and physical equilibria.
Prerequisite: CBE 202 and MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 502 Advanced Reactor Design Credits: 3 (3-0-0)
Prerequisite: CBE 320 and CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 503 Transport Phenomena Fundamentals Credits: 3 (3-0-0)
Course Description: General topics in transport phenomena; analytical and numerical solutions of laminar flows; perturbation techniques; coupled transport.
Prerequisite: CBE 406.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 504 Fundamentals of Biochemical Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 504.
Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.
Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).
Registration Information: Credit not allowed for both CBE 504 and BIOM 504.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CBE 505 Biochemical Engineering Laboratory  Credit: 1 (0-3-0)
Course Description: Fermentation technology, bioprocess control, and protein purification.
Prerequisite: CBE 504, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CBE 514 Polymer Science and Engineering  Credits: 3 (3-0-0)
Course Description: Fundamentals of polymer science: synthesis, characterization, processing of polymers. Physical properties of polymers; rheology of melts and solutions.
Prerequisite: (CHEM 343 or CHEM 346) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 521 Mathematical Modeling for Chemical Engineers  Credits: 3 (3-0-0)
Course Description: Application of mathematical models to analysis and design of chemical reactors and separation processes.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 522 Bioseparation Processes  Credits: 3 (2-2-0)
Also Offered As: BIOM 522.
Course Description: Analysis of processes to recover and purify fermentation products.
Prerequisite: CBE 331.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 522 and BIOM 522.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 524 Bioremediation  Credit: 1 (1-0-0)
Course Description: Use of biotechnology for site remediation. Biodegradation, bioreactor design, and in situ bioremediation.
Prerequisite: CBE 540 or CIVE 540.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 540 Advanced Biological Wastewater Processing  Credits: 3 (3-0-0)
Also Offered As: CIVE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Credit not allowed for both CBE 540 and CIVE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 543 Membranes for Biotechnology and Biomedicine  Credits: 3 (3-0-0)
Also Offered As: BIOM 543.
Course Description: Polymeric membrane formation, modification, module design and applications to bioproduction and biomedical separations and tissue engineering.
Prerequisite: CHEM 343 and CBE 310.
Registration Information: Credit not allowed for both CBE 543 and BIOM 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 570 Biomolecular Engineering/Synthetic Biology  Credits: 3 (3-0-0)
Course Description: Rational design and evolutionary methods for engineering functional protein and nucleic acid systems.
Prerequisite: (BC 351) and (CHEM 341 or CHEM 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Major in Chemical and Biological Engineering

Chemical and biological engineering is a powerful blend of basic sciences and the skills to quantitatively describe, predict, and control all changes of matter. This provides the foundation to create cutting-edge materials and products, to design new devices to improve health or the environment, and to design processes for the safe production of chemicals and biochemicals, the production of alternative energy sources, and prevention of hazardous waste.

The Chemical and Biological Engineering curriculum is based on the sciences of physics, chemistry, biology, and mathematics. It includes engineering science and design methods, as well as humanities and social sciences. Students can pursue interdisciplinary studies programs or minors. Popular options include minors in chemistry, mathematics, environmental engineering, and biomedical engineering. The curriculum is well-aligned to meet pre-health profession requirements. The Chemical and Biological Engineering program provides an environment that promotes a sense of professionalism, the development of project management skills, and an appreciation for the value of life-long learning. Graduates of our program are well prepared to enter a variety of professions, or to pursue further education. The broad, strong scientific basis of chemical and biological engineering has kept our graduates consistently near or at the top in salary and demand among B.S. graduates.

The Chemical and Biological Engineering major is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Program Educational Objectives

The Chemical and Biological Engineering program at CSU will empower graduates with the educational foundation to:

- Be highly successful, as defined by accomplishments, advanced certifications, and job satisfaction, in chemical and biological engineering practice, post-graduate education, or other careers making use of engineering knowledge.
- Be identified for both their mastery of fundamental chemical and biological engineering principles and their creative application of those principles to the solution of problems across a diverse range of career disciplines.
- Be recognized as critical, creative and independent thinkers who use their technical expertise and leadership to address the needs of society and advance their fields of expertise.
- Be recognized for their effectiveness in teamwork, communication, and service to society through their professional contributions.
- Hold paramount health and safety of the public and the environment.
- Demonstrate the highest standards of professional, ethical, and civic responsibility in all endeavors.
- Demonstrate continued professional growth through a commitment to lifelong learning.

Student Outcomes

Graduates of the undergraduate Chemical and Biological Engineering programs will have:

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multidisciplinary teams
- An ability to identify, formulate, and solve chemical and biological engineering problems
- An understanding of professional and ethical responsibility
- An ability to communicate effectively
- The broad education necessary to understand the impact of chemical and biological engineering solutions in a global, economic, environmental, and societal context
- A recognition of the need for, and an ability to engage in life-long learning
• A knowledge of contemporary issues
• An ability to use the techniques, skills, and modern engineering tools necessary for chemical and biological engineering practice

**Potential Occupations**

Chemical and Biological Engineering graduates find employment with the biotechnology, biomedical, microelectronics, environmental, consulting, alternative energy, petroleum, chemical, food, pharmaceutical and other private sector industries and with government agencies. Participation in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels. In addition to pursuing M.S. and Ph.D. degrees in chemical and biological engineering and related fields, some of our graduates have obtained M.D., D.V.M., law, and M.B.A. degrees.

**Requirements**

**Effective Fall 2016**

**Freshman**

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<th>Course</th>
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<td>CHEM 111</td>
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Additional Requirements for Graduation:

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**Sophomore**

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<td>CBE 205</td>
<td>Introduction to Biological Engineering</td>
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<td>CBE 210</td>
<td>Thermodynamic Process Analysis</td>
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<td>Modern Organic Chemistry I</td>
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**Junior**

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<td>CBE 330</td>
<td>Process Simulation</td>
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<td>CBE 331</td>
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Bioscience elective

Technical electives:

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<td>Advanced Writing</td>
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1 Additional Requirements for Graduation

2 Total Credits
Global and Cultural Awareness 3E 3
Historical Perspectives 3D 3
Additional Requirements for Graduation\(^1\) 0

| Total Credits | 35 |

**Senior**

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<td>CBE 430</td>
<td>Process Control and Instrumentation</td>
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<td>CBE 442</td>
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Engineering elective\(^2\) 3
Technical elective\(^2\) 3

| Additional Requirements for Graduation\(^1\) | 0 |

| Total Credits | 29 |

Program Total Credits: 130

\(^1\) Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student's four-year program.

\(^2\) Select from departmental list of approved courses.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for this major assumes students enter college prepared to take calculus. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

**Freshman**

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PLI Workshop(s)

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PLI Workshop(s)

| Total Credits | 16 |
### Sophomore

#### Semester 3

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CBE 201</td>
<td>Material and Energy Balances</td>
<td>X</td>
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<tr>
<td>CBE 205</td>
<td>Introduction to Biological Engineering</td>
<td>X</td>
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<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>X</td>
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<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>X</td>
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<td>Arts and Humanities</td>
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PLI Workshop(s)

Total Credits: 16

#### Semester 4

<table>
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<tr>
<td>CBE 210</td>
<td>Thermodynamic Process Analysis</td>
<td>X</td>
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<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
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<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
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<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
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<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
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PLI Workshop(s)

Total Credits: 17

### Junior

#### Semester 5

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<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
<td>X</td>
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<tr>
<td>CBE 310</td>
<td>Molecular Concepts and Applications</td>
<td>X</td>
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<tr>
<td>CBE 330</td>
<td>Process Simulation</td>
<td>X</td>
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<tr>
<td>CBE 331</td>
<td>Momentum Transfer and Mechanical Separations</td>
<td>X</td>
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<td>Advanced Writing</td>
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PLI Workshop(s)

Total Credits: 19

#### Semester 6

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<tr>
<td>CBE 320</td>
<td>Chemical and Biological Reactor Design</td>
<td>X</td>
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<tr>
<td>CBE 332</td>
<td>Heat and Mass Transfer Fundamentals</td>
<td>X</td>
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<tr>
<td>CBE 493</td>
<td>Professional Development Seminar</td>
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<td>Bioscience Elective</td>
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<td>Historical Perspectives</td>
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PLI Workshop(s)

Total Credits: 16

### Senior

#### Semester 7

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<tbody>
<tr>
<td>CBE 333</td>
<td>Chemical and Biological Engineering Lab I</td>
<td>X</td>
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<tr>
<td>CBE 442</td>
<td>Separation Processes</td>
<td>X</td>
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<tr>
<td>CBE 451</td>
<td>Chemical and Biological Engineering Design I</td>
<td>X</td>
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<td>Technical Elective</td>
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PLI Workshop(s)

Total Credits: 15

#### Semester 8

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<tr>
<td>CBE 430</td>
<td>Process Control and Instrumentation</td>
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<tr>
<td>CBE 443</td>
<td>Chemical and Biological Engineering Lab II</td>
<td>X</td>
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<tr>
<td>CBE 452</td>
<td>Chemical and Biological Engineering Design II</td>
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<td>Engineering Elective</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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PLI Workshop(s)

Total Credits: 15
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

<table>
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<tr>
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<td>Program Total Credits:</td>
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Department of Civil and Environmental Engineering

Office in Engineering Building, Room A203
(970) 491-5048
engr.colostate.edu/ce (http://www.engr.colostate.edu/ce/index.shtml)

Professor Charles D. Shackelford, Department Head
Laurie Alburn, Graduate and Undergraduate Advisor

The Department of Civil and Environmental Engineering administers undergraduate and graduate degrees in Civil Engineering and an undergraduate degree in Environmental Engineering.

Undergraduate Majors

- Major in Civil Engineering
  - Soil and Water Resource Engineering Concentration (No new students being admitted.)

- Major in Environmental Engineering
  - Environmental Engineering Concentration
  - Ecological Engineering Concentration

Minors

- Minor in Environmental Engineering

Graduate

Graduate Programs in Civil and Environmental Engineering

In Civil Engineering, programs leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees are offered. Focus areas include construction engineering and management (Ph.D. only), environmental engineering, geoenvironmental engineering, groundwater engineering, hydraulic engineering/stream restoration and river mechanics, hydrologic science and engineering, irrigation and drainage engineering, structural engineering and structural mechanics, water and international development, water resources planning and management, wind engineering and fluid mechanics.

A practice-oriented, course-work only, Master of Engineering (M.E.) degree program is available to students with a baccalaureate degree in engineering. Graduates of some science programs also are eligible for the M.E., but typically are required to complete some background engineering courses at the undergraduate level in addition to the required courses for their graduate degree. Master of Engineering tracks are offered in environmental engineering, geotechnical engineering, infrastructure engineering, irrigation engineering, structural engineering, and water resources engineering.

Students interested in graduate work should refer to the Graduate and Professional Bulletin or the Civil Engineering Department (http://www.engr.colostate.edu/ce/degreeinfo.shtml).

Master Program

- Master of Science in Civil Engineering, Plan A*
- Master of Science in Civil Engineering, Plan B*
- Master of Engineering, Plan C, Civil Engineering Specialization

Ph.D.

- Ph.D. in Civil Engineering*

* Please see department for program of study.

Courses

Subjects in this department include: Civil Engineering and Environmental Engineering

Civil Engineering (CIVE)

CIVE 102 Introduction: Civil/Environmental Engineering Credits: 3 (2-3-0)
Course Description: Civil engineering profession, computer applications and programming related to civil engineering; introduction to surveying.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 103 Engineering Graphics and Computing Credits: 3 (2-2-0)
Course Description: Introduction to the profession and academia; principles of civil engineering design; graphical, oral, and written communication; team projects.
Prerequisite: CIVE 102 or ENGR 101.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 202 Numerical Modeling and Risk Analysis Credits: 3 (2-2-0)
Course Description: Civil engineering systems, simulation and optimization techniques, statistical tools and their use in civil engineering, risk analysis.
Prerequisite: (CIVE 103) and (MATH 160, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 203 Engineering Systems and Decision Analysis Credits: 3 (2-2-0)
Course Description: Civil engineering infrastructure systems, numerical and decision analysis techniques, applications of risk analysis.
Prerequisite: CIVE 202.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 260 Engineering Mechanics-Statics Credits: 3 (3-0-0)
Course Description: Forces using vector notation; static equilibrium of rigid bodies; friction, virtual work, centroids, and moments of inertia.
Prerequisite: MATH 160 and PH 141, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 300 Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Fluid properties, statics, kinematics, and dynamics of fluid motion including viscous and gravitational effects.
Prerequisite: (CIVE 261 and MATH 340, may be taken concurrently) and (MECH 237, may be taken concurrently or MECH 337, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 301 Fluid Mechanics Laboratory Credit: 1 (0-3-0)
Course Description: Fluid properties; statics, kinematics, and dynamics of fluid motion including viscous and gravitational effects.
Prerequisite: CIVE 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 302 Evaluation of Civil Engineering Materials Credits: 3 (2-3-0)
Course Description: Behavior and properties of construction materials, instrumentation, use of statistical tools, material standards, material selection, quality control.
Prerequisite: CHEM 111 and CIVE 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 303 Infrastructure and Transportation Systems Credits: 3 (3-0-0)
Course Description: Principles of infrastructure systems, transportation systems, applications of spatial data and GIS, project management and engineering economy.
Prerequisite: CIVE 260.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 305 Intermediate AutoCAD Credits: 3 (2-2-0)
Course Description: Creating layouts and templates, objects, graphic patterns and symbols, inserting and managing external references, and creating isometric drawings.
Prerequisite: CIVE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 322 Basic Hydrology Credits: 3 (3-0-0)
Course Description: Hydrographic cycle, soil moisture, groundwater, runoff processes, applications in water resources and environmental engineering.
Prerequisite: (CIVE 300 or CBE 331 or WR 416) and (CIVE 202 or STAT 301 or STAT 315).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 330 Ecological Engineering Credits: 3 (3-0-0)
Course Description: Principles of ecological engineering and design of sustainable ecosystems.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 102 or SOCR 240) and (CHEM 113) and (CIVE 300 or LIFE 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 355 Introduction to Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Soil behavior, stress-strain and strength properties, application to earth pressure, slope and foundation problems.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 356 Geotechnical Engineering Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory to demonstrate standard methods of soils testing, methods of data collection, analysis of results.
Prerequisite: CIVE 355, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 360 Mechanics of Solids Credits: 3 (3-0-0)
Course Description: Stresses and deformations in structural members and machine elements, combined stresses, stress transformation.
Prerequisite: CIVE 260 or CIVE 262.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 363 Material Properties Credit: 1 (0-3-0)
Course Description: Mechanical properties of metals, woods, and plastics; testing techniques and standards.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 367 Structural Analysis Credits: 3 (3-0-0)
Course Description: Determination of actions in and deformations of determinate and indeterminate structures.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 390 Civil Engineering Student Projects Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 401 Hydraulic Engineering Credits: 3 (3-0-0)
Course Description: Basic principles of fluid mechanics applied to practical problems in hydraulic engineering.
Prerequisite: CIVE 300.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 402 Senior Design Principles Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: (CIVE 300) and (CIVE 303 or CHEM 245).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 403 Senior Project Design Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: CIVE 402.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 413 Environmental River Mechanics Credits: 3 (3-0-0)
Course Description: Fluvial geomorphology, river hydraulics, sediment transport, and river response with special emphasis on environmental aspects.
Prerequisite: CIVE 300 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 423 Groundwater Engineering Credits: 3 (3-0-0)
Course Description: Development of groundwater resources; origin, movement, distribution of water below ground surface.
Prerequisite: CIVE 300 or CBE 331 or WR 416.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 424 Modern Gas and Oil Credits: 3 (3-0-0)
Also Offered As: GEOL 424.
Course Description: Introduction to opportunities and challenges of modern gas and oil development, including synergies with other energy sources.
Prerequisite: None.
Registration Information: Junior standing or above; completion of AUCC category 3A. Credit not allowed for both CIVE 424 and GEOL 424.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 425 Soil and Water Engineering Credits: 3 (2-3-0)
Course Description: Control of the soil-water-plant medium for optimum plant growth and environmental protection.
Prerequisite: CBE 331 or CIVE 300 or SOCR 240.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 437 Wastewater Treatment Facility Design Credits: 3 (3-0-0)
Course Description: Design concepts and principles for wastewater treatment systems and unit processes, principles of treatment plant operation.
Prerequisite: (CIVE 300) and (CIVE 438, may be taken concurrently or ENVE 438, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 438 Environmental Engineering Concepts Credits: 3 (3-0-0)
Course Description: Environmental engineering approaches to designing water supply, wastewater removal, and pollution control systems.
Prerequisite: (CHEM 113) and (CIVE 300 or CBE 331 or MECH 342).
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 439 Environmental Engineering Chemical Concepts Credits: 3 (2-3-0)
Also Offered As: CBE 439.
Course Description: Application of chemical principles to environmental engineering problems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CIVE 439 and CBE 439.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 440 Nonpoint Source Pollution Credits: 3 (3-0-0)
Course Description: Principles, processes, impacts and control of nonpoint source pollution of surface and groundwater.
Prerequisite: CIVE 300 or CIVE 322 or SOCR 240 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 441  Water Quality Analysis and Treatment  Credits: 3 (2-3-0)
Course Description: Physical, chemical and biological methods for the characterization of waters and wastewaters.
Prerequisite: CIVE 438, may be taken concurrently or CIVE 440, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 455  Applications in Geotechnical Engineering  Credits: 3 (3-0-0)
Course Description: Geotechnical engineering applications of earth retaining structures, foundations, dams and embankments, geosynthetics, waste containment systems.
Prerequisite: CIVE 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 466  Design and Behavior of Steel Structures  Credits: 3 (3-0-0)
Course Description: Loads acting on a structure; behavior and design of steel members, connections, and systems.
Prerequisite: CIVE 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 467  Design of Reinforced Concrete Structures  Credits: 3 (3-0-0)
Course Description: Design and behavior of reinforced concrete structural members.
Prerequisite: CIVE 367.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 495  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:  
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:  
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 502  Fluid Mechanics  Credits: 3 (3-0-0)
Course Description: Fundamental physical concepts of fluid mechanics; ideal and viscous fluid flows; boundary-layer concepts.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 504  Wind Engineering  Credits: 3 (3-0-0)
Course Description: Influence of wind on humanity. Applications to structures, air pollution, wind energy, agricultural aerodynamics, snow movement, human comfort.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 506  Wind Effects on Structures  Credits: 3 (3-0-0)
Course Description: Analysis of wind effects on buildings and structures; deterministic and probabilistic methods; aerodynamic loading and response; codes and standards.
Prerequisite: CIVE 504.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 507  Transportation Engineering  Credits: 3 (3-0-0)
Course Description: Principles of highway engineering, transportation engineering and bridge engineering with a focus on design.
Prerequisite: CIVE 261 and CIVE 303 and CIVE 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 510  Applied Hydraulic System Design  Credits: 3 (3-0-0)
Course Description: Operational management systems, data collection, real-time control, management modeling, rehabilitation and retrofit, maintenance.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 512  Irrigation Systems Design  Credits: 3 (3-0-0)
Course Description: Irrigation systems principles and design procedures for operation of sprinkler, trickle, and surface irrigation systems.
Prerequisite: CIVE 322 or CIVE 425.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 514  Hydraulic Structures/Systems  Credits: 3 (3-0-0)
Course Description: Analysis and design of hydraulic structures which make up components of water resource systems.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 516  Water Control and Measurement  Credits: 3 (3-0-0)
Course Description: Flow regulation and measurement in gravity flow irrigation systems for efficient and equitable water distribution among users.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 518  Sprinkler and Trickle Irrigation Systems  Credits: 3 (3-0-0)
Course Description: Basic principles, design, and evaluation of pressurized irrigation systems.
Prerequisite: CIVE 300 and CIVE 425.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 519  Irrigation Water Management  Credits: 3 (3-0-0)
Course Description:  Apply soil, plant, water, and atmospheric engineering principles to determine crop water need to sustain agricultural production and the environment.
Prerequisite:  CIVE 425.
Registration Information:  Sections may be offered: Online.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

CIVE 520  Physical Hydrology  Credits: 3 (3-0-0)
Course Description:  Hydrologic, atmospheric processes in the water cycle; linear systems, hydrologic response; geomorphologic description of hydrologic processes, response.
Prerequisite:  CIVE 322 or CIVE 322.
Registration Information:  Sections may be offered: Online.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

CIVE 521  Hydrometry  Credits: 3 (2-3-0)
Course Description:  Principles, methods, instruments, and equipment for measuring water quantity and water quality variables in nature.
Prerequisite:  CIVE 322.
Registration Information:  Must register for lecture and laboratory.
Term Offered:  Fall (even years).
Grade Mode:  Traditional.
Special Course Fee:  Yes.

CIVE 522  Engineering Hydrology  Credits: 3 (3-0-0)
Course Description:  Hydrologic design under uncertainty; conventional and remote sensing; design flows and storms; river routing; reservoir design; watershed models.
Prerequisite:  CIVE 520.
Registration Information:  Sections may be offered: Online.
Term Offered:  Spring.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

CIVE 524  Modeling Watershed Hydrology  Credits: 3 (2-2-0)
Also Offered As:  WR 524.
Course Description:  Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite:  (CIVE 322 or WR 416) and (STAT 315 or STAT 301 or CIVE 202).
Registration Information:  Must register for lecture and recitation. Credit not allowed for both CIVE 524 and WR 524.
Term Offered:  Spring (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

CIVE 525  Water Engineering: International Development  Credits: 3 (3-0-0)
Course Description:  Planning and design of small-scale and low-cost water supply and wastewater systems for rural communities in developing countries
Prerequisite:  CIVE 401 or CIVE 438 or ENVE 438.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  Yes.

CIVE 531  Groundwater Hydrology  Credits: 3 (3-0-0)
Course Description:  Groundwater occurrence, distribution, movement, exploration and recharge, well hydraulics and design, interaction of ground and surface water.
Prerequisite:  CIVE 300 or CBE 331 or MECH 342.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

CIVE 532  Wells and Pumps  Credits: 3 (3-0-0)
Course Description:  Well field hydraulics, well drilling methods, well design, aquifer test methods, pumping systems, well maintenance, storage/distribution systems.
Prerequisite:  (CIVE 423 and CHEM 111) and (CIVE 531 or GEOL 452).
Registration Information:  Sections may be offered: Online.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

CIVE 533  Biomolecular Tools for Engineers  Credits: 3 (2-3-0)
Also Offered As:  BIOM 533.
Course Description:  Theoretical and practical aspects of biomolecular laboratory tools--PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.
Prerequisite:  BMS 300 or MIP 300.
Registration Information:  Must register for lecture and laboratory. Credit not allowed for CIVE 533, BIOM 533 and ECE 533.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

CIVE 534  Applied and Environmental Molecular Biology  Credits: 3 (2-2-0)
Course Description:  Environmental microbiology and molecular biology tools used to investigate both natural systems and engineered processes.
Prerequisite:  CIVE 540.
Registration Information:  Must register for lecture and laboratory.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

CIVE 537  Residuals Management  Credits: 3 (3-0-0)
Course Description:  Planning and design for processing and disposal of residuals including solid wastes, sludges, and hazardous wastes.
Prerequisite:  CIVE 300.
Term Offered:  Fall.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

CIVE 538  Aqueous Chemistry  Credits: 3 (3-0-0)
Course Description:  Principles of solution chemistry applied to aquatic systems.
Prerequisite:  CHEM 113 and MATH 340.
Term Offered:  Spring.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.
CIVE 539  Water and Wastewater Analysis  Credits: 3 (2-3-0)
Course Description: Chemical and biological methods of assessing water quality; significance of chemicals in aquatic systems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 540  Advanced Biological Wastewater Processing  Credits: 3 (3-0-0)
Also Offered As: CBE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Credit not allowed for both CIVE 540 and CBE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 541  Environmental Unit Operations-Treatment-Design  Credits: 4 (3-3-0)
Course Description: Reactor theory, filtration, adsorption, ion exchange, gas transfer, oxidation, membranes, biological reactors, disinfection.
Prerequisite: CIVE 439 or CBE 439.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 542  Water Quality Modeling  Credits: 3 (3-0-0)
Course Description: .
Prerequisite: None.
Registration Information: Chemical, physical, and biological processes defining surface water quality, construction and application of computer models for lakes and streams.
Must have taken two semesters of chemistry; one course in hydrology or water quality.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 543  Instrumental Environmental Analysis  Credits: 3 (2-3-0)
Course Description: Environmental sampling and preservation techniques followed by the instrumental analysis of the samples.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 544  Water Resources Planning and Management  Credits: 3 (3-0-0)
Course Description: Management and planning of natural and constructed water systems. Integrated management and case studies of water use and environmental resources.
Prerequisite: CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 546  Water Resource Systems Analysis  Credits: 3 (2-2-0)
Course Description: Applications of systems analysis and optimization techniques in water resources planning and management.
Prerequisite: (CIVE 322, may be taken concurrently or ENVE 322, may be taken concurrently) and (ENGR 510, may be taken concurrently or MATH 510, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 547  Statistics for Environmental Monitoring  Credits: 3 (3-0-0)
Also Offered As: STAT 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both CIVE 547 and STAT 547. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 549  Drainage and Wetland Engineering  Credits: 3 (3-0-0)
Course Description: Drainage and wetlands design for agricultural and natural resource applications. Water table modification for nonpoint sources pollution control.
Prerequisite: CIVE 425 or CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 550  Foundation Engineering  Credits: 3 (3-0-0)
Course Description: Mechanics and methodology of foundation engineering; selection and design of foundation systems on soft, firm, and expansive soils; special problems.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 553  Slope Stability and Retaining Structures  Credits: 3 (3-0-0)
Course Description: Slope stability theory and application, retaining walls, sheet-pile walls, braced excavations, geosynthetic uses.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 556  Seepage and Earth Dams  Credits: 3 (3-0-0)
Course Description: Hydraulic conductivity measurements; seepage analysis and control; earth dam and embankment design; computer applications.
Prerequisite: CIVE 355.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 558  Containment Systems for Waste Disposal  Credits: 3 (3-0-0)
Course Description: Basic principles governing the design of containment systems used in waste disposal applications.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 559  Special Topics in Geotechnical Engineering  Credits: 3 (3-0-0)
Course Description: Advanced topics in geotechnical engineering including expansive soils, unsaturated soil mechanics, soil-structure interaction and mining geotechnics.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 561  Advanced Steel Behavior and Design  Credits: 3 (3-0-0)
Course Description: Behavior of steel components and systems. Design of composite members, plate girders, and bolted and welded connections.
Prerequisite: CIVE 466.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 562  Fundamentals of Vibrations  Credits: 3 (3-0-0)
Course Description: Free and forced vibrations of single, two, and multiple degree of freedom systems. Closed-form and numerical solutions.
Prerequisite: CIVE 261 and CIVE 360.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 563  Structural Reliability: Theory, Application  Credits: 3 (3-0-0)
Course Description: Theory of structural reliability as it relates to analysis, design, construction, and maintenance of structural and mechanical systems.
Prerequisite: CIVE 203 or STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 565  Finite Element Method  Credits: 3 (3-0-0)
Course Description: Theory and application in elasticity, porous flow, heat conduction, and other engineering problems.
Prerequisite: MATH 340.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 566  Intermediate Structural Analysis  Credits: 3 (3-0-0)
Course Description: Work and energy concepts, curved members and arches, matrix analysis of linear systems, numerical techniques.
Prerequisite: CIVE 367.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 567  Advanced Concrete Design  Credits: 3 (3-0-0)
Course Description: Behavior of reinforced and prestressed concrete members; development of design methods; behavior and design of slabs, shearwalls, and buildings.
Prerequisite: CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 568  Design of Masonry and Wood Structures  Credits: 3 (3-0-0)
Course Description: Behavior and design of structures and structural components constructed of masonry or engineered wood.
Prerequisite: CIVE 466 or CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 571  Pipeline Engineering and Hydraulics  Credits: 3 (3-0-0)
Course Description: Water supply, wastewater, stormwater, oil and gas, and industrial applications. Emphasis on pressurized water pipelines.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 572  Analysis of Urban Water Systems  Credits: 3 (2-2-0)
Course Description: Behavior and interaction of urban water distribution and collection systems; how system state and driving variables affect system performance.
Prerequisite: CIVE 300 and CIVE 401.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 573  Urban Stormwater Management  Credits: 3 (3-0-0)
Course Description: Effects of urbanization on watershed hydrology and receiving waters; control practices to mitigate effects using mathematical models.
Prerequisite: (CIVE 322) and (CIVE 401).
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 574  Civil Engineering Project Management  Credits: 3 (3-0-0)
Course Description: Principles of civil engineering project management including proposals, contracts, scheduling, quality assurance, budgeting, and risk management.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 575  Sustainable Water and Waste Management  Credits: 3 (3-0-0)
Course Description: The science, engineering, and policy behind sustainable water and waste practices. Sustainable urban water and wastewater management.
Prerequisite: CIVE 322 or ENVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 576  Engineering Applications of GIS and GPS  Credits: 3 (2-2-0)
Course Description: Integration of GPS and GIS in the planning and decision making process, application to case study.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 577  GIS in Civil and Environmental Engineering  Credits: 3 (2-2-0)
Course Description: GIS technology for spatial design/analysis; applications in facilities management, urban infrastructure, water resources, environmental engineering.
Prerequisite: (CIVE 300) and (CIVE 322).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 578  Infrastructure and Utility Management  Credits: 3 (3-0-0)
Course Description: Infrastructure and utility planning, management, and security. Systems approach to life cycle management. Problems, analysis, decision support systems.
Prerequisite: None.
Registration Information: Ten credits of engineering, economics, public administration, or planning courses. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 579  Risk and Security of the Built Environment  Credits: 3 (3-0-0)
Course Description: Infrastructure security and safety to prepare the built environment against natural and human-caused threats.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 584  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592A  Seminar: Fluid Mechanics and Wind Engineering  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592E  Seminar: Geotechnical Engineering  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592G  Seminar: Environmental Engineering  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 592L  Seminar: Space Engineering  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595A  Independent Study: Fluid Mechanics/Wind Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595B  Independent Study: Hydraulics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595C  Independent Study: Hydrology and Water Resources  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 595D Independent Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595E Independent Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595F Independent Study: Structures Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595G Independent Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595H Independent Study: Water Resources Planning and Management Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595I Independent Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595J Independent Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596A Group Study: Fluid Mechanics/Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596B Group Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596C Group Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596D Group Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596E Group Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596F Group Study: Structures Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596G Group Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596H Group Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 596I Group Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 596J Group Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 604 Fluid Turbulence and Modeling Credits: 3 (3-0-0)
Course Description: Engineering concepts for transport of pollutants, toxic and flammable species, sand, and snow. Fluid modeling, numerical and analytical approaches.
Prerequisite: CIVE 502 or CIVE 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 607 Computational Fluid Dynamics Credits: 3 (3-0-0)
Course Description: Numerical methods used in computational solutions of hydraulics, environmental and wind engineering problems.
Prerequisite: CIVE 300.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 610 Special Topics in Hydraulics Credits: 3 (3-0-0)
Course Description: Advanced topics in hydraulics, hydromechanics, environmental hydraulics, and computational hydraulics.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 612 Open Channel Flow Credits: 4 (4-0-0)
Course Description: Steady, uniform, and non-uniform flow; backwater curves; flow through bridge piers, transitions, and culverts; spatially varied and unsteady flow.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 613 River Restoration Design Credits: 3 (3-0-0)
Course Description: Analysis and design for assisting the recovery of hydrologic, geomorphic, and ecological processes and ecosystem services in degraded river systems.
Prerequisite: CIVE 401.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 622 Risk Analysis of Water/Environmental Systems Credits: 3 (3-0-0)
Course Description: Risk and uncertainty analysis applied to hydrology, hydraulics, groundwater, water resources, and environmental engineering systems.
Prerequisite: (CIVE 322) and (STAT 315).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 624 Control of Floods and Droughts Credits: 3 (3-0-0)
Course Description: Flood and drought characteristics, impacts; structural, nonstructural flood control measures; drought prediction, drought control, drought response.
Prerequisite: CIVE 522.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 625 Quantitative Eco-Hydrology Credits: 3 (3-0-0)
Course Description: Quantitative examination of the hydrologic and ecologic mechanisms underlying climate-soil-vegetation and soil moisture dynamics.
Prerequisite: CIVE 322 or WR 416.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 626 Integrated Analysis of Coupled Water Issues Credits: 3 (3-0-0)
Course Description: Integrative systems and policy analysis applied to coupled human-water systems from interdisciplinary technical and institutional perspectives.
Prerequisite: GR 304 or WR 304.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 631 Computational Methods in Subsurface Systems Credits: 3 (3-0-0)
Course Description: Numerical flow models; finite difference and finite element methods; parameter identification, stochastic modeling and advanced analytical solutions.
Prerequisite: (MATH 340) and (CIVE 531).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 638 Groundwater Quality and Contaminant Transport Credits: 3 (3-0-0)
Course Description: Analysis of hydrochemical data. Advection with and without mixing. Retardation of reactive solutes. Design of groundwater quality investigations.
Prerequisite: CIVE 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 645  Computer-Aided Water Management and Control  Credits: 3 (2-2-0)
Course Description: Real-time management and control of water resource systems; applications of computer control concepts to improve system performance.
Prerequisite: CIVE 546 or CIVE 577.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 654  Experimental Soil Mechanics  Credits: 3 (2-3-0)
Course Description: Experimental design; data acquisition; soil fabric; isotropic/K0 condensation; swelling; stiffness; shear wave velocity; triaxial; hollow cylinder; partial saturation.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 655  Advanced Soil Mechanics  Credits: 3 (3-0-0)
Course Description: Advanced topics in shear strength and consolidation of soils; stress paths; anisotropy; submergence; partial and radial drainage; numerical methods.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 658  Remediation Systems - Subsurface Contamination  Credits: 3 (3-0-0)
Course Description: Applications in geoenvironmental engineering practice involving design of in situ containment and remediation systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 662  Foundations of Solid Mechanics  Credits: 3 (3-0-0)
Course Description: Analysis of stress and strain in solids emphasizing linear elasticity and plasticity; introduction to creep, viscoelasticity, and finite deformations.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 664  Mechanics of Fatigue and Fracture  Credits: 3 (3-0-0)
Course Description: Fracture mechanics including linear elastic, elastic-plastic, and dynamic fracture; on ductile and cleavage fracture in metals.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Traditional.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 667  Advanced Structural Analysis  Credits: 3 (3-0-0)
Course Description: Analysis program development, application of finite element analysis, computer-assisted analysis, introduction to nonlinear analysis.
Prerequisite: CIVE 566.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 667  Advanced Structural Analysis  Credits: 3 (3-0-0)
Course Description: Analysis program development, application of finite element analysis, computer-assisted analysis, introduction to nonlinear analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695A  Independent Study: Fluid Mechanics and Wind Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695B  Independent Study: Hydraulics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695C  Independent Study: Hydrology and Water Resources  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695D  Independent Study: Mechanics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 695E Independent Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695F Independent Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695G Independent Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695H Independent Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695I Independent Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695J Independent Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695K Independent Study: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696A Group Study: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696B Group Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696C Group Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696D Group Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696E Group Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696F Group Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 696G Group Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696H Group Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696I Group Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696J Group Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699B Thesis: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699C Thesis: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699E Thesis: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699F Thesis: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699G Thesis: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699H Thesis: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699I Thesis: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699J Thesis: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699K Thesis: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 703  Special Topics in Fluid Mechanics  Credits: 3 (3-0-0)
Course Description: Advanced topics in fluid mechanics; associated experimental and numerical techniques.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 716 Erosion and Sedimentation  Credits: 3 (3-0-0)
Course Description: Sediment properties; resistance to flow; incipient motion and bedforms; sediment transport, reservoir sedimentation.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 721 Stochastic Water and Environmental Systems  Credits: 3 (3-0-0)
Course Description: Stochastic analysis of water and environmental systems. Simulation, forecasting, spatial analysis, modeling changes, stochastic differential equations.
Prerequisite: CIVE 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 722 Large Scale Hydrology  Credits: 3 (3-0-0)
Course Description: Global and regional scale hydrologic processes; land/atmosphere interaction; scaling in hydrology; geomorphoclimatic structure of hydrologic response.
Prerequisite: CIVE 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 724 River Basin Morphology  Credits: 3 (3-0-0)
Course Description: Analysis of river basin properties including their connections to statistical theories and erosion processes and their hydrologic implications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 742 Advanced Topics in Environmental Engineering  Credits: 3 (2-3-0)
Course Description: Selected topics from current environmental engineering research including molecular methods, water/wastewater treatment, hazardous water remediation.
Prerequisite: CIVE 540.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 751 Soil Dynamics  Credits: 3 (3-0-0)
Course Description: Soil behavior under dynamic loading; stress wave propagation; foundation response to vibratory and transient loading; elements of earthquake effects.
Prerequisite: CIVE 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 766 Theory of Plates and Shells  Credits: 3 (3-0-0)
Course Description: Classical plate, shell and membrane theory for isotropic and layered anisotropic media. Analytic and computational solution techniques.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
Environmental Engineering (ENVE)

Major in Civil Engineering

The undergraduate Civil Engineering program provides a solid base in the physical sciences, mathematics, engineering fundamentals, and design and management concepts. The All-University Core Curriculum provides a broad background in communication, liberal arts, humanities, and social sciences. In addition to the offering of courses in all of the various sub-disciplines of Civil Engineering, the Civil Engineering curriculum covers design practices, information technology, technical communications, project management, and engineering ethics. The program culminates in a year-long, term-based, senior capstone design experience. Preparation for high-level professional practice is emphasized. The Fundamentals of Engineering (FE) exam is strongly encouraged and is the first step toward registration as a Professional Engineer (PE), an important professional credential for civil engineers. Our graduates from this major consistently have a passing rate significantly above the national average on the FE exam.

Participation in internships, volunteer activities, professional organizations, and cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who pursue advanced studies are prepared for higher level technical responsibilities.

The educational outcomes and objectives for the Civil Engineering program, along with additional information on this major, are given at engr.colostate.edu/ce (http://www.engr.colostate.edu/ce/undergrad.shtml). The Civil Engineering major is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Potential Occupations

Civil engineers are employed in many different organizations, including small and large consulting firms, local, state, and federal governmental agencies, and industrial companies such as construction, petroleum,
and aerospace firms. Civil engineers also may find opportunities in specialized design, research, and teaching.

Some example job titles for graduates with an undergraduate degree in Civil Engineering (BSCE) include, but are not limited to, civil engineer, transportation engineer, hydraulic engineer, water resources engineer, structural engineer, geotechnical engineer, geoenvironmental engineer, groundwater engineer, hydrologist, wind engineer, urban/regional planner, infrastructure engineer or manager, contract administrator, construction engineer or manager, building construction inspector, facilities engineer or manager, industrial transportation specialist, industrial designer/engineer, construction materials engineer, irrigation engineer, mining engineer, mining and petroleum research engineer, technical sales engineer, and educator.

### Requirements

#### Effective Fall 2016

<table>
<thead>
<tr>
<th>Freshman</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CIVE 102</td>
<td>Introduction: Civil/Environmental Engineering</td>
<td>3</td>
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<tr>
<td>CIVE 103</td>
<td>Engineering Graphics and Computing</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>3A</td>
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</table>

Science Technical Electives select one of the following groups:

**Group A**
- BZ 110 Principles of Animal Biology (GT-SC2) | 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) | 3A

**Group B**
- BZ 120 Principles of Plant Biology (GT-SC1) | 3A

**Group C**
- GEOL 120 Exploring Earth: Physical Geology (GT-SC2) | 3A
- GEOL 121 Introductory Geology Laboratory (GT-SC1) | 3A

**Group D**
- GEOL 121 Introductory Geology Laboratory (GT-SC1) | 3A
- GEOL 122 The Blue Planet: Geology of Our Environment (GT-SC2) | 3A

**Group E**
- GEOL 121 Introductory Geology Laboratory (GT-SC1) | 3A
- GEOL 124 Geology of Natural Resources (GT-SC2) | 3A

**Group F**
- GEOL 150 Physical Geology for Scientists and Engineers

**Group G**
- LIFE 102 Attributes of Living Systems (GT-SC1) | 3A

**Additional Requirements for Graduation**

| Total Credits | 31 |

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<tr>
<th>Sophomore</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
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<tr>
<td>CIVE 202</td>
<td>Numerical Modeling and Risk Analysis</td>
<td>3</td>
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<tr>
<td>CIVE 203</td>
<td>Engineering Systems and Decision Analysis</td>
<td>3</td>
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<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
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<tr>
<td>CIVE 261</td>
<td>Engineering Mechanics-Dynamics</td>
<td>3</td>
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<tr>
<td>CIVE 360</td>
<td>Mechanics of Solids</td>
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<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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<tr>
<td>MECH 237</td>
<td>Introduction to Thermal Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>
Major in Civil Engineering

Arts and Humanities 3B 3
Social and Behavioral Sciences 3C 3
Additional Requirements for Graduation 0

Total Credits 36

Junior

CIVE 300 Fluid Mechanics 3
CIVE 301 Fluid Mechanics Laboratory 1
CIVE 302 Evaluation of Civil Engineering Materials 3
CIVE 303 Infrastructure and Transportation Systems 3
CIVE 322 Basic Hydrology 3
CIVE 355 Introduction to Geotechnical Engineering 3
CIVE 356 Geotechnical Engineering Laboratory 1
CIVE 367 Structural Analysis 3
CIVE 467 Design of Reinforced Concrete Structures 3
MATH 340 Introduction to Ordinary Differential Equations 4

Civil Engineering Technical Elective (see list below) 2 3
Advanced Writing 2 3
Additional Requirements for Graduation 0

Total Credits 33

Senior

CIVE 401 Hydraulic Engineering 3
CIVE 402 Senior Design Principles 4A, 4B 3
CIVE 403 Senior Project Design 4C 3
CIVE 438 Environmental Engineering Concepts 3
CIVE 466 Design and Behavior of Steel Structures 3

Civil Engineering Technical Electives and/or Additional Technical Electives (see lists below) 2 6
Arts and Humanities 3B 3
Global and Cultural Awareness 3E 3
Historical Perspectives 3D 3

Additional Requirements for Graduation 0

Total Credits 30

Program Total Credits: 130

CIVIL ENGINEERING TECHNICAL ELECTIVES

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOM 533/CIVE 533</td>
<td>Biomolecular Tools for Engineers</td>
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<tr>
<td>CBE 439/CIVE 439</td>
<td>Environmental Engineering Chemical Concepts</td>
<td>3</td>
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<tr>
<td>CBE 540/CIVE 540</td>
<td>Advanced Biological Wastewater Processing</td>
<td>3</td>
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<td>CIVE 305</td>
<td>Intermediate AutoCAD</td>
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<td>CIVE 330</td>
<td>Ecological Engineering</td>
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<tr>
<td>CIVE 413</td>
<td>Environmental River Mechanics</td>
<td>3</td>
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<td>CIVE 423</td>
<td>Groundwater Engineering</td>
<td>3</td>
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<tr>
<td>CIVE 424/GEOL 424</td>
<td>Modern Gas and Oil</td>
<td>3</td>
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<td>CIVE 425</td>
<td>Soil and Water Engineering</td>
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<td>CIVE 437</td>
<td>Wastewater Treatment Facility Design</td>
<td>3</td>
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<td>CIVE 440</td>
<td>Nonpoint Source Pollution</td>
<td>3</td>
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<td>CIVE 455</td>
<td>Applications in Geotechnical Engineering</td>
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<td>CIVE 502</td>
<td>Fluid Mechanics</td>
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<td>CIVE 504</td>
<td>Wind Engineering</td>
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<td>CIVE 506</td>
<td>Wind Effects on Structures</td>
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<td>CIVE 507</td>
<td>Transportation Engineering</td>
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<td>CIVE 510</td>
<td>Applied Hydraulic System Design</td>
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<td>CIVE 512</td>
<td>Irrigation Systems Design</td>
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<td>CIVE 514</td>
<td>Hydraulic Structures/Systems</td>
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<td>CIVE 516</td>
<td>Water Control and Measurement</td>
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<td>CIVE 519</td>
<td>Irrigation Water Management</td>
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<td>CIVE 520</td>
<td>Physical Hydrology</td>
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<td>CIVE 521</td>
<td>Hydrometry</td>
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<td>CIVE 522</td>
<td>Engineering Hydrology</td>
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<td>CIVE 524/WR 524</td>
<td>Modeling Watershed Hydrology</td>
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<td>CIVE 525</td>
<td>Water Engineering: International Development</td>
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<td>CIVE 531</td>
<td>Groundwater Hydrology</td>
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<td>CIVE 532</td>
<td>Wells and Pumps</td>
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<td>CIVE 537</td>
<td>Residuals Management</td>
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<td>CIVE 538</td>
<td>Aqueous Chemistry</td>
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<td>CIVE 539</td>
<td>Water and Wastewater Analysis</td>
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<td>CIVE 541</td>
<td>Environmental Unit Operations-Treatment-Design</td>
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<td>CIVE 544</td>
<td>Water Resources Planning and Management</td>
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<td>CIVE 546</td>
<td>Water Resource Systems Analysis</td>
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<td>CIVE 549</td>
<td>Drainage and Wetland Engineering</td>
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<td>CIVE 550</td>
<td>Foundation Engineering</td>
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<td>Slope Stability and Retaining Structures</td>
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<td>CIVE 556</td>
<td>Seepage and Earth Dams</td>
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<td>CIVE 558</td>
<td>Containment Systems for Waste Disposal</td>
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<td>CIVE 559</td>
<td>Special Topics in Geotechnical Engineering</td>
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<td>CIVE 560</td>
<td>Advanced Mechanics of Materials</td>
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<td>CIVE 561</td>
<td>Advanced Steel Behavior and Design</td>
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<td>CIVE 562</td>
<td>Fundamentals of Vibrations</td>
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<td>CIVE 563</td>
<td>Structural Reliability: Theory, Application</td>
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<td>CIVE 565</td>
<td>Finite Element Method</td>
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<td>Intermediate Structural Analysis</td>
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<td>CIVE 567</td>
<td>Advanced Concrete Design</td>
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<td>CIVE 568</td>
<td>Design of Masonry and Wood Structures</td>
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<td>CIVE 571</td>
<td>Pipeline Engineering and Hydraulics</td>
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<tr>
<td>CIVE 573</td>
<td>Urban Stormwater Management</td>
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<tr>
<td>CIVE 574</td>
<td>Civil Engineering Project Management</td>
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<tr>
<td>CIVE 575</td>
<td>Sustainable Water and Waste Management</td>
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<tr>
<td>CIVE 576</td>
<td>Engineering Applications of GIS and GPS</td>
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<td>CIVE 577</td>
<td>GIS in Civil and Environmental Engineering</td>
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<tr>
<td>CIVE 578</td>
<td>Infrastructure and Utility Management</td>
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<td>CIVE 579</td>
<td>Risk and Security of the Built Environment</td>
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<td>ENGR 550/MATH 550</td>
<td>Numerical Methods in Science and Engineering</td>
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**ADDITIONAL TECHNICAL ELECTIVES**

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<tr>
<td>AA 301</td>
<td>Astrophysics I</td>
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<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
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Major in Civil Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>CON 370</td>
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<td>3</td>
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<tr>
<td>ERHS 446</td>
<td>Environmental Toxicology</td>
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<tr>
<td>FIN 305</td>
<td>Fundamentals of Finance</td>
<td>3, 4</td>
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<tr>
<td>GEOl 442</td>
<td>Applied Geophysics</td>
<td>4</td>
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<tr>
<td>GR 323/NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
<td>3</td>
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<td>LIFE 320</td>
<td>Ecology</td>
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<td>MATH 332</td>
<td>Partial Differential Equations</td>
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<td>MATH 369</td>
<td>Linear Algebra I</td>
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<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<td>MIP 300</td>
<td>General Microbiology</td>
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<tr>
<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
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<tr>
<td>NR 319</td>
<td>Geospatial Applications in Natural Resources</td>
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<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
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<td>WR 304/GR 304</td>
<td>Sustainable Watersheds</td>
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</table>

1 Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

2 Select 6 credits from the Civil Engineering Technical Electives list, and an additional course from either the same list, or from the list of Additional Technical Electives. Only 3 credits of a 4- or 5-credit course will apply toward this requirement.

3 Students may need to obtain an override or approval from the respective department to take this course.

4 Only one of FIN, MGT, or MKT at the 300-level may be counted toward the Technical Elective requirement.

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

Freshman

Semester 1

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<tbody>
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<td>College Composition (GT-CO2)</td>
<td>X</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>X</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>X</td>
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Semester 2

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<tr>
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<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<td>Science Technical Elective with Lab (See approved courses on Requirements Tab)</td>
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Sophomore

Semester 3

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<td>General Chemistry I (GT-SC2)</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<tr>
<td>CIVE 202</td>
<td>Numerical Modeling and Risk Analysis</td>
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<td>Course</td>
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<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
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<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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**Semester 4**

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<tr>
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<td>Engineering Systems and Decision Analysis</td>
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<td>CIVE 261</td>
<td>Engineering Mechanics-Dynamics</td>
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<td>Introduction to Thermal Sciences</td>
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**Junior**

**Semester 5**

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<td>CIVE 301</td>
<td>Fluid Mechanics Laboratory</td>
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<td>CIVE 302</td>
<td>Evaluation of Civil Engineering Materials</td>
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<td>CIVE 367</td>
<td>Structural Analysis</td>
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<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
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<td>Advanced Writing</td>
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**Semester 6**

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<tr>
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<td>Infrastructure and Transportation Systems</td>
<td>X</td>
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<td>CIVE 322</td>
<td>Basic Hydrology</td>
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<td>CIVE 355</td>
<td>Introduction to Geotechnical Engineering</td>
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<td>CIVE 356</td>
<td>Geotechnical Engineering Laboratory</td>
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<td>CIVE 467</td>
<td>Design of Reinforced Concrete Structures</td>
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<td>Civil Engineering Technical Electives (See list on Major Requirements tab)</td>
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<tr>
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**Senior**

**Semester 7**

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<td>CIVE 402</td>
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<td>CIVE 438</td>
<td>Environmental Engineering Concepts</td>
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<tr>
<td>CIVE 466</td>
<td>Design and Behavior of Steel Structures</td>
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<td>Historical Perspectives</td>
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**Semester 8**

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<td>CIVE 403</td>
<td>Senior Project Design</td>
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<td>4C</td>
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<td>Arts and Humanities</td>
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<tr>
<td>Global and Cultural Awareness</td>
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</table>
Major in Civil Engineering, Soil and Water Resource Engineering Concentration

Students are no longer being admitted to this concentration. Students currently enrolled in this concentration should consult with their advisor regarding degree completion requirements.

Requirements

Major in Environmental Engineering

Environmental engineers design solutions that prevent future pollution as well as correct existing pollution problems. The undergraduate curriculum in Environmental Engineering is based on a strong foundation in physical and biological sciences, mathematics, and engineering fundamentals. The All-University Core Curriculum provides a broad background in communication, liberal arts, humanities, and social sciences. Upper-division courses address engineering applications for prevention and control of air, water, and land pollution. Required courses that are specific to the Environmental Engineering major come from several engineering and science disciplines, including organic and environmental chemistry, microbiology, hydrology, statistics, environmental toxicology, and water treatment. Technical electives provide specialization in a particular field of interest. Seniors complete the same year-long, capstone design experience as do Civil Engineering majors, working in teams on real-world engineering problems.

Participation in student professional societies, other campus organizations, internships, and volunteer activities is highly recommended to foster personal growth and professional development. The Fundamentals of Engineering (FE) exam is strongly encouraged and is the first step toward registration as a Professional Engineer, an important professional credential for environmental engineers. As in the case of the Civil Engineering majors, our graduates from this major consistently achieve a passing rate on the FE exam that is above the national average. The education outcomes and objectives for the Environmental Engineering major, along with additional information on this major, are found on the Department's website (http://www.engr.colostate.edu/ce/whatisee.shtml). The Environmental Engineering major is accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Potential Occupations

The expansion of our population and economy, along with increased public concern and regulation of environmental quality, will contribute to the increased demand for the services of environmental engineers, both in the U.S. and abroad. Environmental engineers typically are employed in designing pollution prevention equipment and systems, designing environmental monitoring systems, helping both government and industry implement environmental regulations, designing water and wastewater treatment systems, and restoring ecosystem health.

B.S. graduates in Environmental Engineering from CSU are well prepared for entry-level positions with regulatory agencies, engineering consulting firms, and environmental divisions of large corporations, particularly in the energy and manufacturing industries. Some example job titles for graduates include, but are not limited to, hydraulic engineer, water resources engineer, environmental engineer, geoenvironmental engineer, reclamation engineer, stormwater engineer, floodplain manager, groundwater engineer, hydrologist, urban/regional planner, water infrastructure engineer or manager, contract administrator, facilities engineer or manager, irrigation engineer, ecological engineer, and educator. Graduate study in a specific area of interest is highly recommended to enhance the ability to undertake more advanced technical responsibilities upon graduation.

Concentrations

• Environmental Engineering Concentration

• Ecological Engineering Concentration

Major in Environmental Engineering, Ecological Engineering Concentration

Requirements

Effective Fall 2015

Freshman

Select one group from the following:

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<td>BZ 120</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>CIVE 103</td>
<td>Engineering Graphics and Computing</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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Additional Requirements for Graduation

Total Credits: 31

**Sophomore**

Select one from the following:

- CBE 201: Material and Energy Balances
- MECH 237: Introduction to Thermal Sciences
- CHEM 113: General Chemistry II
- CHEM 114: General Chemistry Lab II
- CIVE 260: Engineering Mechanics-Statics
- CIVE 261: Engineering Mechanics-Dynamics
- CIVE 360: Mechanics of Solids
- MATH 261: Calculus for Physical Scientists III
- SOCR 240: Introductory Soil Science

Advanced Writing: 2

Arts and Humanities: 3B

Global and Cultural Awareness: 3E

Additional Requirements for Graduation

Total Credits: 33

**Junior**

- CIVE 300: Fluid Mechanics: 3
- CIVE 301: Fluid Mechanics Laboratory: 1
- CIVE 322: Basic Hydrology: 3
- CIVE 330: Ecological Engineering: 3
- CIVE 438: Environmental Engineering Concepts: 3
- MATH 340: Introduction to Ordinary Differential Equations: 4
- LIFE 320: Ecology: 3
- STAT 315: Statistics for Engineers and Scientists: 3

Science Technical Electives (see list below): 3

Historical Perspectives: 3D

Additional Requirements for Graduation

Total Credits: 36

**Senior**

- CIVE 401: Hydraulic Engineering: 3
- CIVE 402: Senior Design Principles: 4A,4B
- CIVE 403: Senior Project Design: 3
- CIVE 439/CBE 439: Environmental Engineering Chemical Concepts: 3
- CIVE 440: Nonpoint Source Pollution: 3
- CIVE 441: Water Quality Analysis and Treatment: 3
- ERHS 446: Environmental Toxicology: 3

Arts and Humanities: 3B

Additional Requirements for Graduation

Total Credits: 36
Science Technical Electives (see list below) 3
Engineering Technical Electives (see list below) 3
Additional Requirements for Graduation 1

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<td>Science Technical Electives 2</td>
<td></td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
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<tr>
<td>BZ 474</td>
<td>Limnology</td>
<td>3</td>
<td></td>
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<tr>
<td>RS 478</td>
<td>Ecological Restoration</td>
<td>3</td>
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<tr>
<td>Select an additional course from BZ 471, BZ 474, RS 478 above or from the following:</td>
<td></td>
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<tr>
<td>BZ 450</td>
<td>Plant Ecology</td>
<td>4</td>
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<tr>
<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
<td>3</td>
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<td>MIP 300</td>
<td>General Microbiology</td>
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<tr>
<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
<td>4</td>
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<tr>
<td>SOCR 455</td>
<td>Soil Microbiology</td>
<td>3</td>
<td></td>
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<tr>
<td>SOCR 470</td>
<td>Soil Physics</td>
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| Engineering Technical Electives 3 |        |                                            |         |
| Select one course from the following:                           |         |
| CIVE 413           | Environmental River Mechanics                | 3       |
| CIVE 423           | Groundwater Engineering                      | 3       |
| CIVE 425           | Soil and Water Engineering                   | 3       |
| CIVE 437           | Wastewater Treatment Facility Design         | 3       |
| CIVE 521           | Hydrometry                                   | 3       |
| CIVE 524/WR 524    | Modeling Watershed Hydrology                 | 3       |
| CIVE 525           | Water Engineering: International Development | 3       |
| CIVE 538           | Aqueous Chemistry                            | 3       |
| CIVE 539           | Water and Wastewater Analysis                | 3       |
| CIVE 544           | Water Resources Planning and Management      | 3       |
| CIVE 549           | Drainage and Wetland Engineering             | 3       |
| CIVE 575           | Sustainable Water and Waste Management       | 3       |

1. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

2. Select a minimum of 6 credits from the Science Technical Electives department list as shown, with advisor’s approval. Science Technical Electives may not be used to fulfill the Engineering Technical Electives requirement.

3. Select a minimum of 3 credits from the Engineering Technical Electives department list, with advisor’s approval.

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus
areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

**Freshman**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Critical</th>
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<tbody>
<tr>
<td>CIVE 102</td>
<td>Introduction: Civil/Environmental Engineering</td>
<td>X</td>
<td></td>
<td>3</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>X</td>
<td>1B</td>
<td>4</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<td><strong>PLI Workshop(s)</strong></td>
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<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<td>Group B:</td>
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<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>Group C:</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>X</td>
<td>3A</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>X</td>
<td>3A</td>
</tr>
<tr>
<td>CIVE 103</td>
<td>Engineering Graphics and Computing</td>
<td>X</td>
<td></td>
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<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>X</td>
<td>1B</td>
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<tr>
<td><strong>PLI Workshop(s)</strong></td>
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**Sophomore**

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<tr>
<td>SEM 3</td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>X</td>
<td>3</td>
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<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
<td>X</td>
<td>3A</td>
</tr>
<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>X</td>
<td>4</td>
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<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<tr>
<td><strong>PLI Workshop(s)</strong></td>
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<td>X</td>
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**Semester 4**

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<tr>
<td>SEM 4</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>CBE 201</td>
<td>Material and Energy Balances</td>
<td>X</td>
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<tr>
<td>MECH 237</td>
<td>Introduction to Thermal Sciences</td>
<td>X</td>
<td></td>
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<tr>
<td>CIVE 261</td>
<td>Engineering Mechanics-Dynamics</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 360</td>
<td>Mechanics of Solids</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
<td>X</td>
<td>3</td>
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<tr>
<td>Advanced Writing</td>
<td>X</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>PLI Workshop(s)</strong></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
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**Junior**

<table>
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<tr>
<td>SEM 5</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td></td>
<td>3C</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td></td>
<td>3C</td>
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</table>
### Major in Environmental Engineering, Environmental Engineering Concentration

#### Requirements

**Effective Fall 2015**

**Freshman**

Select four credits from the following course or course pair:

<table>
<thead>
<tr>
<th>Group A</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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**Semester 6**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>CIVE 322</td>
<td>Basic Hydrology</td>
<td>3</td>
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<tr>
<td>CIVE 330</td>
<td>Ecological Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 438</td>
<td>Environmental Engineering Concepts</td>
<td>3</td>
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<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td>3</td>
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**Semester 7**

<table>
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<th>Course Code</th>
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<tr>
<td>CIVE 402</td>
<td>Senior Design Principles</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 439</td>
<td>Environmental Engineering Chemical Concepts</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 440</td>
<td>Nonpoint Source Pollution</td>
<td>3</td>
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<tr>
<td>ERHS 446</td>
<td>Environmental Toxicology</td>
<td>3</td>
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**Semester 8**

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<tr>
<td>CIVE 401</td>
<td>Hydraulic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 403</td>
<td>Senior Project Design</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 441</td>
<td>Water Quality Analysis and Treatment</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

**Program Total Credits:** 130
<table>
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<tbody>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>CIVE 102</td>
<td>Introduction: Civil/Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 103</td>
<td>Engineering Graphics and Computing</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
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Additional Requirements for Graduation^1

Total Credits: 31

**Sophomore**

<table>
<thead>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
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<td>CHEM 113</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<tr>
<td>CIVE 202</td>
<td>Numerical Modeling and Risk Analysis</td>
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<tr>
<td>CIVE 203</td>
<td>Engineering Systems and Decision Analysis</td>
<td>3</td>
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<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
<td>3</td>
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<tr>
<td>CIVE 261</td>
<td>Engineering Mechanics-Dynamics</td>
<td>3</td>
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<tr>
<td>CIVE 360</td>
<td>Mechanics of Solids</td>
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<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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<td>MECH 237</td>
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Additional Requirements for Graduation^1

Total Credits: 34

**Junior**

Select one from the following:

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<td>AREC 202</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CIVE 300</td>
<td>Fluid Mechanics</td>
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<tr>
<td>CIVE 301</td>
<td>Fluid Mechanics Laboratory</td>
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<tr>
<td>CIVE 322</td>
<td>Basic Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 401</td>
<td>Hydraulic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 438</td>
<td>Environmental Engineering Concepts</td>
<td>3</td>
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<tr>
<td>CIVE 441</td>
<td>Water Quality Analysis and Treatment</td>
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<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
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<td></td>
<td>Advanced Writing</td>
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<td></td>
<td>Global and Cultural Awareness</td>
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Additional Requirements for Graduation^1

Total Credits: 33

**Senior**

<table>
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<tr>
<td>CIVE 402</td>
<td>Senior Design Principles</td>
<td>4A,4B</td>
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<td>CIVE 403</td>
<td>Senior Project Design</td>
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<td>CIVE 425</td>
<td>Soil and Water Engineering</td>
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</tr>
<tr>
<td>CIVE 439/CBE 439</td>
<td>Environmental Engineering Chemical Concepts</td>
<td>3</td>
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<tr>
<td>ERHS 446</td>
<td>Environmental Toxicology</td>
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</table>
Major in Environmental Engineering, Environmental Engineering Concentration

MIP 300
Arts and Humanities
Historical Perspectives
Technical Electives $^3$  $^4$
Additional Requirements for Graduation $^1$

Total Credits
Program Total Credits:

### Engineering Technical Electives

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<tr>
<td>BIOM 533/CIVE 533</td>
<td>Biomolecular Tools for Engineers</td>
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<tr>
<td>CBE 540/CIVE 540</td>
<td>Advanced Biological Wastewater Processing</td>
<td>3</td>
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<td>CIVE 305</td>
<td>Intermediate AutoCAD</td>
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<td>CIVE 330</td>
<td>Ecological Engineering</td>
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<tr>
<td>CIVE 355</td>
<td>Introduction to Geotechnical Engineering</td>
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<td>CIVE 356</td>
<td>Geotechnical Engineering Laboratory</td>
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<td>CIVE 413</td>
<td>Environmental River Mechanics</td>
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<tr>
<td>CIVE 423</td>
<td>Groundwater Engineering</td>
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<td>CIVE 437</td>
<td>Wastewater Treatment Facility Design</td>
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<td>CIVE 440</td>
<td>Nonpoint Source Pollution</td>
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<tr>
<td>CIVE 521</td>
<td>Hydrometry</td>
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<tr>
<td>CIVE 522</td>
<td>Engineering Hydrology</td>
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<td>CIVE 524/WR 524</td>
<td>Modeling Watershed Hydrology</td>
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<tr>
<td>CIVE 525</td>
<td>Water Engineering: International Development</td>
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<td>CIVE 531</td>
<td>Groundwater Hydrology</td>
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<td>CIVE 532</td>
<td>Wells and Pumps</td>
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<td>CIVE 537</td>
<td>Residuals Management</td>
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<td>CIVE 538</td>
<td>Aqueous Chemistry</td>
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<td>CIVE 539</td>
<td>Water and Wastewater Analysis</td>
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<td>CIVE 541</td>
<td>Environmental Unit Operations-Treatment-Design</td>
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<td>CIVE 544</td>
<td>Water Resources Planning and Management</td>
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<td>Containment Systems for Waste Disposal</td>
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<td>CIVE 574</td>
<td>Civil Engineering Project Management</td>
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<td>CIVE 575</td>
<td>Sustainable Water and Waste Management</td>
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<td>CIVE 576</td>
<td>Engineering Applications of GIS and GPS</td>
<td>3</td>
</tr>
</tbody>
</table>

### Additional Technical Electives

Select at least 5 credits from the following, or select an additional course from the Engineering Technical Elective list and the remaining credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions $^4$</td>
<td>3</td>
</tr>
<tr>
<td>ATS 555</td>
<td>Air Pollution</td>
<td>3</td>
</tr>
<tr>
<td>ATS 560</td>
<td>Air Pollution Measurement</td>
<td>2</td>
</tr>
<tr>
<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BZ 472</td>
<td>Stream Biology and Ecology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BZ 474</td>
<td>Limnology</td>
<td>3</td>
</tr>
<tr>
<td>GR 323/NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td>3</td>
</tr>
<tr>
<td>MGT 305</td>
<td>Fundamentals of Management $^4$</td>
<td>3</td>
</tr>
<tr>
<td>MGT 310</td>
<td>Human Resource Management $^4$</td>
<td>3</td>
</tr>
</tbody>
</table>
Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

Students wishing to take CBE 501 instead of MECH 237 in the sophomore year, may take the prerequisite courses of CBE 201 and CBE 210 and count two of the six prerequisite credits toward the Additional Technical Elective requirement.

Select at least one course for three credits from the Engineering Technical Electives department list. Select a minimum of 5 more credits from the Additional Technical Electives list, for a total of 8 credits, with advisor’s approval.

Only one course in business management or economics at the 300-level may count toward the Technical Elective requirement.

### Major Completion Map

**Distinctive Requirements for Degree Program:**

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. To qualify for graduation, engineering science majors must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 102</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>X</td>
<td>1A</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>X</td>
<td>1B</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PH 141</td>
<td>X</td>
<td>3A</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>PLI Workshop(s)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Select one group from the following:

Group A:
- BZ 110 Principles of Animal Biology (GT-SC2)
- BZ 111 Animal Biology Laboratory (GT-SC1)

Group B:
- BZ 120 Principles of Plant Biology (GT-SC1)

Group C:
- LIFE 102 Attributes of Living Systems (GT-SC1)

CIVE 103 Engineering Graphics and Computing
- X
- 3

MATH 161 Calculus for Physical Scientists II (GT-MA1)
- X
- 1B
- 4

PH 142 Physics for Scientists and Engineers II (GT-SC1)
- 3A
- 5

PLI Workshop(s)
- X

#### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>X</td>
<td>3A</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>X</td>
<td>3A</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>CIVE 202</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits
- 16
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>4</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>PLI Workshop(s)</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

**Semester 4**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>X</td>
</tr>
<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 203</td>
<td>Engineering Systems and Decision Analysis</td>
<td></td>
</tr>
<tr>
<td>CIVE 261</td>
<td>Engineering Mechanics-Dynamics</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 360</td>
<td>Mechanics of Solids</td>
<td></td>
</tr>
<tr>
<td>MECH 237</td>
<td>Introduction to Thermal Sciences</td>
<td>X</td>
</tr>
<tr>
<td>PLI Workshop(s)</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>16</td>
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</tbody>
</table>

**Junior**

**Semester 5**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
</tr>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 300</td>
<td>Fluid Mechanics</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 301</td>
<td>Fluid Mechanics Laboratory</td>
<td></td>
</tr>
<tr>
<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>X</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>PLI Workshop(s)</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

**Semester 6**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 322</td>
<td>Basic Hydrology</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 401</td>
<td>Hydraulic Engineering</td>
<td></td>
</tr>
<tr>
<td>CIVE 438</td>
<td>Environmental Engineering Concepts</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 441</td>
<td>Water Quality Analysis and Treatment</td>
<td>X</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>PLI Workshop(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 110/BZ 111 or BZ 120 or LIFE 102 must be completed by the end of Semester 6.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

**Senior**

**Semester 7**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 402</td>
<td>Senior Design Principles</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 439</td>
<td>Environmental Engineering Chemical Concepts</td>
<td>X</td>
</tr>
<tr>
<td>ERHS 446</td>
<td>Environmental Toxicology</td>
<td>X</td>
</tr>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
<td></td>
</tr>
<tr>
<td>Technical Elective (See List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLI Workshop(s)</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

**Semester 8**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 403</td>
<td>Senior Project Design</td>
<td>X</td>
</tr>
<tr>
<td>CIVE 425</td>
<td>Soil and Water Engineering</td>
<td>X</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Technical Electives (See List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL CREDITS</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Program Total Credits:</td>
<td>130</td>
</tr>
</tbody>
</table>

Master of Engineering, Plan C, Civil Engineering Specialization

Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL CREDITS</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>A minimum of 30 credits are required to complete this program.</td>
<td></td>
</tr>
</tbody>
</table>

1 Select courses with approval of advisor and graduate committee.

Minor in Environmental Engineering

In order to permit undergraduate students in any engineering major to take advantage of CSU’s environmental expertise, the Department of Civil and Environmental Engineering offers a minor in Environmental Engineering. The minor is designed to broaden the academic background of undergraduate engineering students seeking a career in environmental fields, and to provide fundamentals required to pursue a graduate degree in Environmental Engineering or related fields.

Requirements

Effective Fall 2012

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL CREDITS</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>1 Students in the Civil Engineering major, Civil Engineering concentration, cannot use CIVE 438 for credit in the minor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Students in the Civil Engineering major, Soil and Water Resources concentration, cannot use CIVE 440 for credit in the minor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 May be allowed if not taken as a required course.</td>
<td></td>
</tr>
</tbody>
</table>

Department of Electrical and Computer Engineering

Office in Engineering Building, Room 104
(970) 491-6600
engr.colostate.edu/ece (http://www.engr.colostate.edu/ece)
Overview of Electrical or Computer Engineering

Imagine a world without smart phones, video games, or Google. Such advancements would not be possible without electrical and computer engineers. As an Electrical or Computer Engineering (ECE) student, our professors will prepare you for success in our high-tech world through stimulating coursework and unique hands-on design projects. You will learn a new way of thinking that teaches the importance of innovation and allows you to solve the most complex engineering problems.

ECE students can experience the benefits of a smaller department with top-tier faculty, while enjoying the perks of a large university. ECE courses and research span a range of disciplines that include:

- Biomedical Engineering
- Communications and Signal Processing
- Computer Engineering
- Controls and Robotics
- Electric Power and Energy Systems
- Electromagnetics and Remote Sensing
- Lasers, Optics, and Applications

The ECE undergraduate and graduate curricula are designed to provide a wide coverage of mathematics and science, considerable depth in electrical and computer engineering, exposure to other engineering disciplines, and a general knowledge of the humanities and social sciences.

We offer two undergraduate degree programs: a Bachelor of Science in Electrical Engineering and a Bachelor of Science in Computer Engineering. The B.S. in Electrical Engineering also offers a concentration in Lasers and Optical Engineering. You may incorporate a focus in biomedical engineering, as well. During the senior year, all ECE students are required to participate in a capstone design project that combines your interests with classroom learning. You will work on a real-world project, overseeing all phases from design to marketing.

At the graduate level, we offer Master of Engineering, Master of Science, and Doctor of Philosophy programs.

Potential Occupations

A field of endless possibilities, your career path is largely dependent on your interests. ECE alumni do everything from working as a designer at a high-tech company to conducting research for the National Park Service to sending an unmanned vehicle to Mars.

Both the Electrical Engineering major and its concentrations, and the Computer Engineering major are accredited by the Engineering Accreditation Commission of ABET (http://abet.org).

Electrical and Computer Engineering Program Educational Objectives

The program educational objectives for both Electrical Engineering and Computer Engineering programs describe what our students are expected to attain within a few years after graduation.

The ECE program educational objectives are designed and implemented around the following three principal attributes:

**Mastery:** Graduates of Electrical and Computer Engineering will expertly solve engineering problems associated with their professional or educational positions by applying ECE fundamentals, both independently and in a team environment.

**Innovation:** They will successfully demonstrate innovation and creativity in their professional practice or advanced education in engineering or other related fields.

**Leadership:** They will be effective, influential, ethical, and inspirational leaders within their organizations and professions, contributing to the overall strength and well-being of society through service and engagement.

Graduates of the ECE program will be able to:

- Apply knowledge of mathematics, science, and engineering
- Design and conduct experiments; analyze and interpret data
- Design a system, component, or process to meet desired needs within realistic constraints
- Function on multidisciplinary teams
- Identify, formulate, and solve engineering problems
- Understand professional and ethical responsibility
- Communicate effectively
- Use broad education necessary to understand the impact of engineering solutions in a global context
- Recognize the need for life-long learning
- Apply knowledge of contemporary issues
- Use the techniques, skills, and modern engineering tools necessary for engineering

Undergraduate Majors

- Major in Computer Engineering
- Major in Electrical Engineering
  - Electrical Engineering Concentration
  - Lasers and Optical Engineering Concentration
- Major in Biomedical Engineering and Electrical Engineering, Electrical Engineering Concentration
- Major in Biomedical Engineering and Electrical Engineering, Lasers and Optical Engineering Concentration
Graduate
Graduate Programs in Electrical and Computer Engineering
Graduate programs leading to the Master of Science, Master of Engineering (Electrical and Computer Engineering specialization), and Doctor of Philosophy degrees are offered in several areas. An online Master of Engineering degree in Electrical and Computer Engineering also is available. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Electrical and Computer Engineering (http://www.engr.colostate.edu/ece).

Certificates
- Computer Systems Engineering
- Embedded Systems
- Power and Energy

Master Programs
- Master of Science in Electrical Engineering, Plan A
- Master of Science in Electrical Engineering, Plan B
- Master of Science in Electrical Engineering, Plan B (Coursework Only)*
- Master of Engineering, Plan C, Computer Engineering Specialization
- Master of Engineering, Plan C, Electrical Engineering Specialization

Ph.D.
- Ph.D. in Electrical Engineering (M.S. Earned)*
- Ph.D. in Electrical Engineering (No M.S. Earned)*

* Please see department for program of study.

Courses
Electrical and Computer Engineering (ECE)

ECE 102 Digital Circuit Logic Credits: 4 (3-2-0)
Course Description: Boolean algebra; Karnaugh maps; multiplexers, decoders, ROMS, PLAS, flip-flops, counters; sequential networks; state tables.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 103 DC Circuit Analysis Credits: 3 (2-2-0)
Course Description: Basic DC circuit analysis. Use of scientific-oriented software to solve problems and analyze small projects.
Prerequisite: MATH 160 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 202 Circuit Theory Applications Credits: 4 (3-3-0)
Course Description: Basic circuit analysis techniques and applications to engineering design problems.
Prerequisite: ECE 103 with a minimum grade of C and MATH 161 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 204 Introduction to Electrical Engineering Credits: 3 (3-0-0)
Course Description: Basic analog and digital circuits and systems; introduction to electromechanical devices.
Prerequisite: MATH 161 and PH 142.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 251 Introduction to Microprocessors Credits: 4 (3-3-0)
Course Description: Microprocessor organization, assembly language, I/O techniques, real-time interfaces, applications, hardware/software.
Prerequisite: ECE 102 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 303 Introduction to Communications Principles Credits: 3 (3-0-0)
Also Offered As: STAT 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently or MATH 345, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 311 Linear System Analysis I Credits: 3 (3-0-0)
Course Description: Continuous and discrete time signals and systems representations in time and frequency domain; time convolution.
Prerequisite: (ECE 202 with a minimum grade of C) and (MATH 340 with a minimum grade of C or MATH 345 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 312 Linear System Analysis II Credits: 3 (3-0-0)
Course Description: Laplace and Z transforms, applications to modulation, filtering and sampling, state space representation.
Prerequisite: ECE 311 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 325 Telecommunication Networks Credits: 3 (3-0-0)
Course Description: Principle technologies that support data and voice communications.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 331  Electronics Principles I  Credits: 4 (3-3-0)
Course Description: Discrete component semiconductor devices, characteristics and applications. Rectifier circuits, single-stage and multi-stage amplifiers.
Prerequisite: (ECE 202 with a minimum grade of C) and (MATH 340 with a minimum grade of C or MATH 345 with a minimum grade of C) and (PH 142 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 332  Electronics Principles II  Credits: 4 (3-3-0)
Course Description: Discrete and integrated-circuit amplifiers-frequency response, negative feedback; digital logic circuits.
Prerequisite: ECE 331 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 341  Electromagnetic Fields and Devices I  Credits: 3 (3-0-0)
Course Description: Basic concepts of electrostatic and magnetostatic fields.
Prerequisite: (ECE 202 with a minimum grade of C) and (MATH 340 with a minimum grade of C or MATH 345 with a minimum grade of C) and (PH 142 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 342  Electromagnetic Fields and Devices II  Credits: 3 (3-0-0)
Course Description: Basic concepts of time varying electromagnetic fields and transmission lines.
Prerequisite: ECE 341 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 395A  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description: Development and implementation of a project in an Electrical and Computer Engineering field of special interest under the supervision of a faculty member.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395B  Independent Study: Open Option Project  Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395C  Independent Study : Vertically Integrated Project  Credits: Var[1-6] (0-0-0)
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 401  Senior Design Project I  Credits: 3 (1-4-0)
Course Description: Advanced project, seminar series, formal written report, and oral presentation.
Prerequisite: (CS 320 with a minimum grade of C or ECE 332 with a minimum grade of C) and (ECE 312 with a minimum grade of C or PH 314 with a minimum grade of C) and (ECE 342 with a minimum grade of C or ECE 452 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 402  Senior Design Project II  Credits: 3 (1-4-0)
Course Description: Advanced project, formal report, and oral presentation.
Prerequisite: ECE 401.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 404  Experiments in Optical Electronics  Credits: 2 (1-3-0)
Course Description: Experiments in optical electronics and lasers.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 441. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 411  Control Systems  Credits: 4 (3-3-0)
Course Description: Control system analysis and design for linear systems: stability and performance; time and frequency domain techniques.
Prerequisite: ECE 312 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 412  Digital Control and Digital Filters  Credits: 3 (3-0-0)
Course Description: FIR and IIR digital filter design, analog and digital invariance and direct digital control algorithms, hybrid systems analysis.
Prerequisite: ECE 411.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 421 Telecommunications I Credits: 3 (3-0-0)
Course Description: Digital communication (source coding; modulation and detection; channel coding), analog communication (modulation).
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 422 Telecommunications II Credits: 3 (3-0-0)
Course Description: Issues of source coding, detection and estimation, and equalization; introduction of information theory.
Prerequisite: ECE 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 423 DSP for Communications Credits: 3 (1-4-0)
Course Description: Design and programming of communication and signal processing algorithms into DSP hardware using C and assembly language.
Prerequisite: ECE 312.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 430 Fourier and Wavelet Analysis with Apps Credits: 3 (3-0-0)
Also Offered As: MATH 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 430 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 431 Biomedical Signal and Image Processing Credits: 3 (3-0-0)
Also Offered As: BIOM 431.
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.
Prerequisite: (ECE 303 with a minimum grade of C and ECE 311 with a minimum grade of C) and (PH 142 with a minimum grade of C).
Registration Information: Credit not allowed for both BIOM 431 and ECE 431.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 441 Optical Electronics Credits: 3 (3-0-0)
Course Description: Concepts of modern physics, optical properties of atoms, light sources, lasers, optical detectors, optical cavities, and optical fiber transmission.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 442 Numerical Algorithms for VLSI Modeling Credits: 4 (3-3-0)
Course Description: Provide the foundational knowledge of numerical algorithms for modeling and simulations of high speed VLSI circuits.
Prerequisite: ECE 312 with a minimum grade of C and ECE 332 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 444 Antennas and Radiation Credits: 3 (3-0-0)
Course Description: Retarded potential theory, antenna arrays, long wire antennas, dipoles, aperture antennas, receiving antennas.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 450 Digital System Design Laboratory Credit: 1 (0-3-0)
Course Description: Small digital circuits are designed and simulated using very high speed hardware description language and synthesis tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 451.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 451 Digital System Design Credits: 3 (3-0-0)
Course Description: State machines with PLAs as controllers and small computers; timing and race elimination considerations; state and microprogramming implementation.
Prerequisite: ECE 102 with a minimum grade of C and ECE 202 with a minimum grade of C.
Registration Information: Concurrent registration in ECE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 452 Computer Organization and Architecture Credits: 3 (3-0-0)
Course Description: CPU design; microarchitecture; data path and control path; pipelining; memory system; I/O system; program optimization by system software/hardware.
Prerequisite: ECE 251 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 454 Database Computers Credits: 3 (3-0-0)
Course Description: Computer architectures for database processing. Data filters, associative processors, parallel and distributed computers, text search processors.
Prerequisite: ECE 251 with a minimum grade of C or CS 370.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 455 Introduction to Robot Programming/Simulation  Credits: 3 (3-0-0)
Course Description: Fundamentals of simulating and programming of workcells that include robots and other articulated objects.
Prerequisite: ECE 202 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 456 Computer Networks  Credits: 4 (3-3-0)
Course Description: Circuit/packet switching, protocols, LAN/MAN, TCP/IP, error correction, wireless LANS, mobile networks.
Prerequisite: (ECE 332 with a minimum grade of C and ECE 461 with a minimum grade of C) and (ECE 251 with a minimum grade of C) and (CS 157 with a minimum grade of C and CS 156 with a minimum grade of C).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 457 Fourier Optics  Credits: 3 (3-0-0)
Course Description: Introduction to optical systems for signal and information processing with emphasis on Fourier optics.
Prerequisite: ECE 311 with a minimum grade of C and ECE 342 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 461 Power Systems  Credits: 3 (3-0-0)
Course Description: Multi-phase power systems; power generation, transformer design, power distribution, power costs.
Prerequisite: ECE 332 with a minimum grade of C and ECE 462 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 462 Power Systems Laboratory  Credit: 1 (0-3-0)
Course Description: Set of labs designed to enhance students' understanding of power systems.
Prerequisite: ECE 332 with a minimum grade of C and ECE 461 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 465 Electrical Energy Generation Technologies  Credits: 3 (3-0-0)
Course Description: Various electrical energy generation alternatives. Comparisons based on cost, reliability, availability and environmental impact.
Prerequisite: ECE 202 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 466 Integrated Lighting Systems  Credits: 3 (3-0-0)
Course Description: Technical underpinnings of light sources, their associated heat sink fixtures and power electronics drivers.
Prerequisite: ECE 331 or INTD 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471A Semiconductor Physics  Credit: 1 (1-0-0)
Course Description: Fundamentals of semiconductor electron, hole states and motion: bandgap, effective mass, carrier density, Fermi level, doping, drift and diffusion.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471B Semiconductor Junctions  Credit: 1 (1-0-0)
Course Description: Quantitative analysis of field, carrier and current distributions in pn and metal-semiconductor junctions.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471A, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 472 MOS Integrated Circuits  Credits: 3 (3-0-0)
Course Description: MOS transistor theory, design rules, layout design, gate, cell and circuit design, memories, clocking strategies, MOS technologies.
Prerequisite: ECE 332 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 475B Independent Study: Open Option Project  Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
ECE 495C  Independent Study: Vertically Integrated Projects  Credits:  Var[1-6] (0-0-0)  
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.  
Prerequisite: None.  
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

ECE 507  Plasma Physics and Applications  Credits: 3 (3-0-0)  
Course Description: Fundamental principles and industrial applications of plasmas.  
Prerequisite: ECE 342.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
ECE 514 Applications of Random Processes Credits: 3 (3-0-0)
Course Description: Bit-error rates, signal-to-noise power ration, signal detection, signal estimation, Wiener filter, application.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 515 Satellite Navigation Systems Engineering Credits: 3 (3-0-0)
Course Description: Fundamentals of GPS, satellite orbits, ground monitoring and control, receiver systems, measurement errors and correction techniques, and position, velocity, and time calculations.
Prerequisite: (ECE 303 or STAT 303) and (ECE 421).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 520 Optimization Methods-Control and Communication Credits: 3 (3-0-0)
Course Description: Linear and nonlinear optimization theory and methods; applications in systems, control, and communication.
Prerequisite: MATH 229 and MATH 317.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 521 Satellite CommunicationCredits: 3 (3-0-0)
Course Description: Principles of satellite communication systems engineering.
Prerequisite: ECE 421.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 524 Wireless Telecommunications Credits: 3 (3-0-0)
Course Description: Physical layer design, including channel modeling, receiver design and performance, and multiple access techniques.
Prerequisite: ECE 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 525 Fiber Optic Communications Credits: 3 (3-0-0)
Course Description: Optoelectronic and optical components for fiber optics; communications system physical layer issues and examples.
Prerequisite: ECE 471B.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 526 Biological Physics Credits: 3 (3-0-0)
Also Offered As: BIOM 526.
Course Description: Mathematical and physical modeling of biological systems. Mass transport in cellular environments. Electrical/mechanical properties of biomolecules.
Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).
Registration Information: Credit not allowed for both ECE 526 and BIOM 526. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 532 Dynamics of Complex Engineering Systems Credits: 3 (3-0-0)
Also Offered As: ENGR 532.
Course Description: Higher-level behavior and issues that emerge from interaction between components in complex socio-technical systems.
Prerequisite: ENGR 501, may be taken concurrently or ECE 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 532 and ENGR 532. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 534 Analog Integrated Circuit Design Credits: 3 (3-0-0)
Course Description: Design methods for state-of-the-art analog integrated circuits including CMOS op-amps, comparators, and phase-locked loops.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Must have concurrent registration in ECE 535. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 535 Analog Integrated Circuit Laboratory Credit: 1 (0-2-0)
Course Description: Analog integrated circuits are designed and simulated using modern software tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 534. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 536 RF Integrated Circuit Design Credits: 3 (3-0-0)
Course Description: Design of state-of-the-art ICs for RF applications including CMOS low-noise amplifiers, voltage-controlled oscillators, mixers and power amplifiers.
Prerequisite: ECE 332.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 537 Biomedical Signal Processing Credits: 3 (3-0-0)
Also Offered As: BIOM 537.
Course Description: Measuring, manipulating, and interpreting biomedical signals.
Prerequisite: MATH 340 or ECE 311 or STAT 303.
Registration Information: Credit not allowed for both ECE 537 and BIOM 537.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ECE 538  Design/Analysis of Analog Digital Interface  Credits: 4 (3-3-0)
Course Description: Topics of interface circuit designs analog and digital interfaces. Basic concept of designing and analyzing analog and digital interface circuits.
Prerequisite: ECE 312 with a minimum grade of C and ECE 332 with a minimum grade of C and ECE 451 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 540  Computational Electromagnetics  Credits: 3 (3-0-0)
Course Description: Computational techniques for practical applications in electromagnetic fields, devices, scattering, propagation, and radiation.
Prerequisite: ECE 342.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 546  Laser Fundamentals and Devices  Credits: 3 (3-0-0)
Course Description: Amplification of light, laser excitation mechanisms, laser devices, characteristics and design.
Prerequisite: ECE 441.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 547  Advanced Robotics—Redundancy & Optimization  Credits: 3 (3-0-0)
Course Description: Advanced analysis, design, and control of kinematically redundant articulated objects, including both robotic and biological systems.
Prerequisite: ECE 455 and MATH 369.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 550A  Microprocessors Based Systems  Credits: 4 (3-2-0)
Course Description: High-performance microprocessors, e.g., 68000 family; intelligent I/O processors. Asynchronous bus, virtual memory, microprocessor in control and multi-user systems.
Prerequisite: ECE 451.
Registration Information: CSUN students only. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 554  Computer Architecture  Credits: 3 (3-0-0)
Course Description: Fundamentals of computer design, multiprocessors and thread-level parallelism, storage systems, and interconnection networks and clusters.
Prerequisite: ECE 452 or CS 470.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 555  Advanced Robotics—Redundancy & Optimization  Credits: 3 (3-0-0)
Course Description: Advanced analysis, design, and control of kinematically redundant articulated objects, including both robotic and biological systems.
Prerequisite: ECE 455 and MATH 369.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ECE 557 Digital Optical Computing  Credits: 3 (3-0-0)
Course Description: Optical devices; optical disks, holographic memories; interconnection networks. Optical systems for numerical and nonnumerical data processing.
Prerequisite: ECE 441 or ECE 451 or ECE 554.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 560 Foundations of Fine-Grain Parallelism  Credits: 4 (3-2-0)
Also Offered As: CS 560.
Course Description: Programming novel architectures; performance tuning; automatic parallelization; program transformation; polyhedral model; equational programming.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ECE 560 and CS 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 561 Hardware/Software Design of Embedded Systems  Credits: 4 (3-3-0)
Also Offered As: CS 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Credit not allowed for both ECE 561 and CS 561. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 562 Power Electronics I  Credits: 3 (3-0-0)
Course Description: Switch mode and resonant converters, control using switch averaged dynamic models, modeling of all circuit components including sources, loads, and switches.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 563 Power Electronics II  Credits: 3 (3-0-0)
Course Description: Electrical energy, processing circuits, lightweight power management, and power conversion circuits emphasizing small signal transfer functions.
Prerequisite: ECE 562.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 564 Resonant Converters  Credits: 3 (3-0-0)
Course Description: Analysis and design of resonant converters.
Prerequisite: ECE 562.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 565 Electrical Power Engineering  Credits: 3 (3-0-0)
Also Offered As: ENGR 565.
Course Description: Analysis of power systems in terms of current, voltage, and active/reactive power; introduction of computer-aided tools for power systems.
Prerequisite: ECE 332 and ECE 342.
Registration Information: Credit not allowed for both ECE 565 and ENGR 565. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 566 Grid Integration of Wind Energy Systems  Credits: 3 (3-0-0)
Also Offered As: ENGR 566.
Course Description: Aspects of integration of wind energy conversion systems (WECS) to electric power transmission grids.
Prerequisite: ECE 461 and ECE 462 or ECE 565.
Registration Information: Credit not allowed for both ECE 566 and ENGR 566. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 568 Electrical Energy Generation Systems  Credits: 3 (3-0-0)
Also Offered As: ENGR 568.
Course Description: Energy systems: renewable and traditional. Physics and operation of energy devices; solar-photovoltaic, wind energy, gas, coal and nuclear plants.
Prerequisite: None.
Registration Information: Written consent of instructor. Credit not allowed for both ECE 568 and ENGR 568. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 569 Micro-Electro-Mechanical Devices  Credits: 3 (3-0-0)
Also Offered As: MECH 569.
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: ECE 331 with a minimum grade of C or MECH 344 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 569 and MECH 569. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 571 VLSI System Design  Credits: 3 (3-0-0)
Course Description: Design of integrated circuits at the system level including cell design, digital systems, parallel architecture, systolic arrays.
Prerequisite: (ECE 451) and (ECE 575, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 572 Semiconductor Transistors  Credit: 1 (1-0-0)
Course Description: Quantitative analysis of electric field, carrier and current distributions in MOSFETs and bipolar junction transistors; scaling, non-idealities.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471B, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 573 Semiconductor Optoelectronics Laboratory Credits: 3 (1-4-0)
Course Description: Experimental characterization techniques for semiconductor optoelectronic devices and design and testing of related electronic circuits.
Prerequisite: ECE 471B.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 611 Nonlinear Control Systems Credits: 3 (3-0-0)
Course Description: Controller analysis and design for nonlinear systems.
Prerequisite: ECE 412.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 612 Robust Control Systems Credits: 3 (3-0-0)
Course Description: Introduction to modern robust control theory techniques for analysis and design of large-scale uncertain multivariable systems.
Prerequisite: ECE 411.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 614 Principles of Digital Communications Credits: 3 (3-0-0)
Course Description: Information theory, optimal receiver design, waveform coding, error correcting coding.
Prerequisite: ECE 514.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 621 Energy Storage for Electrical Power Systems Credits: 3 (3-0-0)
Also Offered As: ENGR 621.
Course Description: Physics and operation of electrical, mechanical, thermal and novel energy storage systems/devices.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Credit not allowed for both ECE 621 and ENGR 621. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 622 Energy Networks and Power Distribution Grids Credits: 3 (3-0-0)
Also Offered As: ENGR 622.
Course Description: Energy networks: generation, storage, consumers. Systems approach to analysis of distribution networks and transition to intelligent grid systems.
Prerequisite: (ECE 411 or MECH 417) and (ECE 565 or ENGR 565).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 622 and ENGR 622. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 623 Electric Power Quality Credits: 3 (3-0-0)
Also Offered As: ENGR 623.
Course Description: Interconnecting power electronic devices and renewable energy sources to power systems.
Prerequisite: ECE 461 or ECE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 623 and ENGR 623. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 641 Electromagnetics  Credits: 3 (3-0-0)
Course Description: Electrostatics, magnetostatics, boundary value problems, EM induction, quasi-statics, Maxwell's equations.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 642 Time Harmonic Electromagnetics  Credits: 3 (3-0-0)
Course Description: Maxwell's equations, radiation, boundary value problem, dyadic Green's functions, scattering theory.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 643 Advanced Accelerator Engineering  Credits: 3 (3-0-0)
Course Description: Advanced concepts in particle beam accelerator technology and engineering, linear accelerators and principles of intense pulsed electron ion beams.
Prerequisite: ECE 543 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 650 Extreme Ultraviolet and Soft X-Ray Radiation  Credits: 3 (3-0-0)
Course Description: Fundamental principles of short wavelength electromagnetic radiation.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 651 Detection Theory  Credits: 3 (3-0-0)
Course Description: Neyman-Pearson and Bayes detectors and properties, matched filter and matched subspace detectors, distributed detection, and applications.
Prerequisite: ECE 512 and ECE 514.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 652 Estimation and Filtering Theory  Credits: 3 (3-0-0)
Course Description: Linear and Nonlinear parameter and state estimation methods; Optimal Kalman state estimation and applications.
Prerequisite: (ECE 411 or ECE 412) and (ECE 514 or STAT 525).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 655 Multidimensional Digital Signal Processing  Credits: 3 (3-0-0)
Course Description: Multidimensional signals and systems, 2-D transforms, stability methods, design and implementations, spectral factorization, and image modeling.
Prerequisite: ECE 512.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 656 Machine Learning and Adaptive Systems  Credits: 3 (3-0-0)
Course Description: Adaptive system theory, statistical pattern recognition, supervised and unsupervised learning, support vector machines, manifold learning, applications.
Prerequisite: ECE 512.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 658 Internet Engineering  Credits: 4 (3-3-0)
Also Offered As: CS 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks routing, switching flow control, multicast, performance, and applications.
Prerequisite: ECE 456 or CS 457.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ECE 658 and CS 658. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 660 Advanced Topics in VLSI Design  Credits: 3 (3-0-0)
Course Description: VLSI synthesis, optimization, and other issues.
Prerequisite: ECE 571.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 661 Advanced Topics in Embedded Systems  Credits: 4 (3-3-0)
Course Description: Embedded systems design: networks on chip, novel memory architectures, synthesis algorithms, optimization for low power, fault tolerance, security.
Prerequisite: (ECE 452) and (ECE 561 or CS 561).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 666 Topics in Robotics  Credits: 3 (3-0-0)
Course Description: Recent advances in robotics, automation, and intelligent systems.
Prerequisite: ECE 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Also Offered As: CS 670B.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 670B and CS 670B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670C  Topics in Architecture/Systems: Distributed Systems Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670C.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 670C and CS 670C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Also Offered As: CS 670D.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 670D and CS 670D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 672  Principles of Semiconductors Credits: 3 (3-0-0)
Also Offered As: PH 672.
Course Description: Electronic properties of semiconductors; band structure, statistics, transport properties, photoelectric properties, potential barriers, interfaces.
Prerequisite: ECE 471B or PH 531.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 672 and PH 672.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 673  Thin Film Growth Credits: 3 (3-0-0)
Course Description: Microstructures of physically vapor-deposited films; thin-film morphological development; atomistic processes of condensation, nucleation, and growth.
Prerequisite: CHEM 474 or CHEM 476 or MECH 337 or PH 361 or PH 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 674  Heterogeneous Computing Credits: 3 (3-0-0)
Also Offered As: CS 674.
Course Description: Allocation of resources to tasks in parallel and distributed heterogeneous computing systems. A variety of computational environments are considered.
Prerequisite: CS 570 or CS 575 or ECE 550A or ECE 550B or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 674 and CS 674.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 695  Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 697  Group Study Credits: Var[1-6] (0-0-0)
Also Offered As: ENGR 697.
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 697 and ENGR 697.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 699  Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 721  Topics in Communication Theory Credits: 3 (3-0-0)
Course Description: Detection and estimation theory; radar-sonar problems; nonlinear modulation; information theory; communication systems.
Prerequisite: ECE 521.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 742  Topics in Electromagnetics Credits: 3 (3-0-0)
Course Description: Applications of wave propagation and scattering to microwave radar, Doppler radar, meteorological radar applications.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ECE 744  Topics in Plasma Dynamics  Credits: 3 (3-0-0)  
Course Description: Kinetic equations, nonlinear theory of waves and instabilities; plasma fluctuation and radiations; plasma diagnostics and plasma heating.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

ECE 752  Topics in Signal Processing  Credits: 3 (3-0-0)  
Course Description: Adaptive filtering, spectral estimation, sonar/radar signal processing, and detection/classification schemes.  
Prerequisite: (ECE 512) and (ECE 514 or STAT 525).  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

ECE 777  X-Ray Lasers  Credits: 3 (3-0-0)  
Course Description: Fundamentals, design, and implementation of soft X-ray lasers and X-ray optics.  
Prerequisite: ECE 546.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

ECE 795  Independent Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

ECE 799  Dissertation  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

Major in Computer Engineering  
A discipline that combines several fields of electrical engineering and computer science, computer engineers continually push the capability and applicability of computers in every industry and every facet of modern life. Computer engineering not only focuses on how computer systems themselves work, but also how they integrate into society.  

Requirements

Effective Spring 2017

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in Electrical Engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with his or her advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below C.

Freshman

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<tr>
<th>Course</th>
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<td>CO 150</td>
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<td>ECE 102</td>
<td>Digital Circuit Logic</td>
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<td>ECE 103</td>
<td>DC Circuit Analysis</td>
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<td>Select one from the following:</td>
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<tr>
<td>CS 163</td>
<td>Java (CS1) No Prior Programming</td>
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<tr>
<td>CS 164</td>
<td>Java (CS1) Prior Programming</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
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<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>3A</td>
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<td>Historical Perspectives</td>
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<td>Electives¹</td>
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Sophomore

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<td>Circuit Theory Applications</td>
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<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
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<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
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<tr>
<td>ECE 251</td>
<td>Introduction to Microprocessors</td>
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<tr>
<td>ECE 303</td>
<td>Introduction to Communications Principles</td>
<td></td>
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<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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</table>
Select one group from the following:

| Group A: |
|-----------------|-------------------|
| MATH 229<sup>3</sup> | Matrices and Linear Equations |
| MATH 345 | Differential Equations |

| Group B: |
|-----------------|-------------------|
| MATH 340 | Introduction to Ordinary Differential Equations |

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<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>3A</td>
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Additional Requirements for Graduation<sup>2</sup>

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Total Credits | 32-34 |

Junior

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<td>CS 253</td>
<td>Software Development with C++</td>
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Select one from the following:

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<tr>
<td>CS 320&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Algorithms--Theory and Practice</td>
<td>3-4</td>
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<tr>
<td>ECE 332&lt;sup&gt;5&lt;/sup&gt;</td>
<td>Electronics Principles II</td>
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<tr>
<td>CS 370</td>
<td>Operating Systems</td>
<td>3</td>
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<tr>
<td>ECE 311</td>
<td>Linear System Analysis I</td>
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<tr>
<td>ECE 312</td>
<td>Linear System Analysis II</td>
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</tr>
<tr>
<td>ECE 331</td>
<td>Electronics Principles I</td>
<td>4</td>
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<tr>
<td>ECE 450</td>
<td>Digital System Design Laboratory</td>
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<tr>
<td>ECE 451</td>
<td>Digital System Design</td>
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<tr>
<td>ECE 452</td>
<td>Computer Organization and Architecture</td>
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Arts and Humanities | 3B | 3 |

Additional Requirements for Graduation<sup>2</sup>

<table>
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<tr>
<th>Credits</th>
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Total Credits | 30-31 |

Senior

Select 12 credits of Technical Electives from the following:<sup>6</sup>

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<tr>
<th>Course</th>
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<tr>
<td>CS 314</td>
<td>Software Engineering</td>
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<tr>
<td>CS 320&lt;sup&gt;7&lt;/sup&gt;</td>
<td>Algorithms--Theory and Practice</td>
<td>6</td>
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<tr>
<td>CS 356</td>
<td>Systems Security</td>
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<tr>
<td>CS 4** Any CS course at the 400-level&lt;sup&gt;6,8&lt;/sup&gt;</td>
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<tr>
<td>CS 5** Any CS course at the 500-level</td>
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</tr>
<tr>
<td>ECE 4** Any ECE course at the 400-level&lt;sup&gt;9&lt;/sup&gt;</td>
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<tr>
<td>ECE 5** Any ECE course at the 500-level&lt;sup&gt;10&lt;/sup&gt;</td>
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<tr>
<td>ECE 401</td>
<td>Senior Design Project I</td>
<td>4A,4B</td>
</tr>
<tr>
<td>ECE 402</td>
<td>Senior Design Project II</td>
<td>4C</td>
</tr>
<tr>
<td>ECE 456</td>
<td>Computer Networks</td>
<td>3</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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Select one from the following:

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<th>Course</th>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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</table>

Arts and Humanities | 3B | 3 |

Global and Cultural Awareness | 3E | 3 |

Additional Requirements for Graduation<sup>2</sup>

<table>
<thead>
<tr>
<th>Credits</th>
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</thead>
<tbody>
<tr>
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</table>

Total Credits | 34 |

Program Total Credits: | 129 |

<sup>1</sup> Free elective credits can be satisfied by completing courses 100 level or above. Student use up to 4 credits of free electives to reach the required total of 129 program credits.
Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

MATH 369 is recommended for students interested in the Mathematics minor.

CS 320 (followed by CS 453 in the senior year) is recommended for students interested in specializing in computer system design.

ECE 332 is recommended for students interested in specializing in VLSI.

CS 453 is recommended as one of the electives for students interested in specializing in computer system design.

CS 320 may count as a Technical Elective ONLY when ECE 332 is also taken. ECE 332 will be applied toward junior year requirement. The course cannot count as credit toward both requirements.

Excluding CS 457 and CS 470.

A total 3 credits of Independent Study may apply toward degree requirements. This includes credit awarded for ECE 395A, ECE 395B, ECE 395C and ECE 495A, ECE 495B, ECE 495C combined.

Excluding ECE 532/ENGR 532.

### Major Completion Map

**Distinctive Requirements for Degree Program:**

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program. In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in Electrical Engineering (ECE) courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with his or her advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering (ECE) course at the 300-level or below in which they receive a grade below C.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
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<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
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<td>ECE 102</td>
<td>Digital Circuit Logic</td>
<td>X</td>
<td>4</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>X</td>
<td>1B</td>
<td>4</td>
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<tr>
<td>Historical Perspectives</td>
<td>X</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>PLI Workshop(s)</td>
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<td>DC Circuit Analysis</td>
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<tr>
<td>CS 163</td>
<td>Java (CS1) No Prior Programming</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>CS 164</td>
<td>Java (CS1) Prior Programming</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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<td>PLI Workshop(s)</td>
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#### Sophomore

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<tr>
<td>CS 161</td>
<td>Object-Oriented Problem Solving</td>
<td>X</td>
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<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
<td>X</td>
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<tr>
<td>ECE 251</td>
<td>Introduction to Microprocessors</td>
<td>X</td>
<td></td>
<td>4</td>
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<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>5</td>
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<td>Semester 4</td>
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<td>CS 200 Algorithms and Data Structures</td>
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<td>ECE 303 Introduction to Communications Principles</td>
<td>X</td>
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<tr>
<td>ECE 202 Circuit Theory Applications</td>
<td>X</td>
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<td>Total Credits</td>
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Select one group from the following: 4-6

Group A:
- MATH 229 Matrices and Linear Equations | X |
- MATH 345 Differential Equations | X |

Group B:
- MATH 340 Introduction to Ordinary Differential Equations | X |

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<td>ECE 311 Linear System Analysis I</td>
<td>X</td>
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<tr>
<td>ECE 331 Electronics Principles I</td>
<td>X</td>
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<td>4</td>
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<tr>
<td>ECE 450 Digital System Design Laboratory</td>
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<tr>
<td>ECE 451 Digital System Design</td>
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<tr>
<td>Total Credits</td>
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<td>15-17</td>
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Select one course from the following: 3-4

- CS 320 Algorithms–Theory and Practice | X |
- ECE 332 Electronics Principles II | X |
- CS 370 Operating Systems | X | 3 |
- ECE 312 Linear System Analysis II | X | 3 |
- ECE 452 Computer Organization and Architecture | X | 3 |
- Arts and Humanities | X | 3B | 3 |
| PLI Workshop(s) | X |

<table>
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<tr>
<th>Senior Semester 6</th>
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<tr>
<td>CS 320 Algorithms–Theory and Practice</td>
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<td></td>
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</tr>
<tr>
<td>ECE 332 Electronics Principles II</td>
<td>X</td>
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<tr>
<td>CS 370 Operating Systems</td>
<td>X</td>
<td>3</td>
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<tr>
<td>ECE 312 Linear System Analysis II</td>
<td>X</td>
<td>3</td>
<td></td>
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<tr>
<td>ECE 452 Computer Organization and Architecture</td>
<td>X</td>
<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td>X</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>PLI Workshop(s)</td>
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</table>

| Total Credits | | | | 15-16 |

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<tr>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ECE 401 Senior Design Project I</td>
<td>X</td>
<td></td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td>X</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
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<td>Select one course from the following: 3</td>
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<td>CO 301B Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
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<td>Technical Electives (See List on Concentration Requirements Tab)</td>
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<tr>
<td>PLI Workshop(s)</td>
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| Total Credits | | | | 18 |

<table>
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<tr>
<td>ECE 402 Senior Design Project II</td>
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<tr>
<td>ECE 456 Computer Networks</td>
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<td>ECON 202 Principles of Microeconomics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Technical Electives (See List on Concentration Requirements Tab)</td>
<td>X</td>
<td></td>
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</table>

| Total Credits | | | | 18 |
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

<table>
<thead>
<tr>
<th>Total Credits</th>
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<tr>
<td>Program Total Credits:</td>
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## Major in Electrical Engineering

From Global Positioning Systems to electric power generation, for more than a century electrical engineers have contributed to the development of a wide array of new technologies. Electrical engineers design, develop, test, and supervise the deployment of electrical systems and electronic devices for a range of industries.

Students choose between the Electrical Engineering and Lasers and Optical Engineering concentrations, each one of which leads to the Bachelor of Science degree. The number of credits within each concentration ranges between 125 and 126 credits. Since the first year of both programs is common, the student need not make his or her choice until the sophomore year. In the senior year, Electrical Engineering students select courses relating to their particular career interests.

## Effective Spring 2017

In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in ECE courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with his or her advisor to correct grade point deficiencies. In addition, it is required that students retake any Electrical Engineering course at the 300-level or below in which they receive a grade below a C.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<td>College Composition (GT-CO2)</td>
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<tr>
<td></td>
<td>Group A:</td>
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<tr>
<td></td>
<td>CS 155</td>
<td>Introduction to Unix</td>
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<tr>
<td></td>
<td>CS 156</td>
<td>Introduction to C Programming I</td>
</tr>
<tr>
<td></td>
<td>CS 157</td>
<td>Introduction to C Programming II</td>
</tr>
<tr>
<td></td>
<td>Group B:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS 163 or 164</td>
<td>Java (CS1) No Prior Programming</td>
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<tr>
<td></td>
<td></td>
<td>Java (CS1) Prior Programming</td>
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<tr>
<td>ECE 102</td>
<td>Digital Circuit Logic</td>
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<tr>
<td>ECE 103</td>
<td>DC Circuit Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Electives¹</td>
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<td>3-4</td>
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<td>Additional Requirements for Graduation²</td>
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<td><strong>Total Credits</strong></td>
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### Sophomore

<table>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>ECE 202</td>
<td>Circuit Theory Applications</td>
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<tr>
<td>ECE 251</td>
<td>Introduction to Microprocessors</td>
<td></td>
</tr>
<tr>
<td>ECE 303/STAT 303</td>
<td>Introduction to Communications Principles</td>
<td>3</td>
</tr>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>4</td>
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<tr>
<td>Select one course from the following:</td>
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---

¹Electives include Chemistry, Physics, Calculus, and other courses.

²Additional requirements for graduation include completion of a minor or a second major.
MATH 340  Introduction to Ordinary Differential Equations
MATH 345  Differential Equations
PH 142  Physics for Scientists and Engineers II (GT-SC1)  3A  5
Science/Math/Engineering Electives (See list below)  3
Additional Requirements for Graduation²  0
Total Credits  31

Junior

Select one course from the following:  3

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td>2</td>
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<tr>
<td>ECE 311</td>
<td>Linear System Analysis I</td>
<td>3</td>
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<tr>
<td>ECE 312</td>
<td>Linear System Analysis II</td>
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<tr>
<td>ECE 331</td>
<td>Electronics Principles I</td>
<td>4</td>
</tr>
<tr>
<td>ECE 332</td>
<td>Electronics Principles II</td>
<td>4A</td>
</tr>
<tr>
<td>ECE 341</td>
<td>Electromagnetic Fields and Devices I</td>
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</tr>
<tr>
<td>ECE 342</td>
<td>Electromagnetic Fields and Devices II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
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<tr>
<td></td>
<td>Science/Math/Engineering Electives (See list below)</td>
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<td>Additional Requirements for Graduation²</td>
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</table>

Total Credits  32

Senior

ECE 401  Senior Design Project I  4A,4B  3
ECE 402  Senior Design Project II  4C  3
ECON 202  Principles of Microeconomics (GT-SS1)  3C  3
Arts and Humanities  3B  6
Technical Electives (See list below)  18
Additional Requirements for Graduation²  0

Total Credits  33

Program Total Credits:  129

Technical Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BIOM 570/MECH 570</td>
<td>Bioengineering</td>
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<tr>
<td>CS 314</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CS 320</td>
<td>Algorithms–Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>CS 356</td>
<td>Systems Security</td>
<td>3</td>
</tr>
<tr>
<td>CS 370</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS 410</td>
<td>Introduction to Computer Graphics</td>
<td>4</td>
</tr>
<tr>
<td>CS 414</td>
<td>Object-Oriented Design</td>
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</tr>
<tr>
<td>CS 420</td>
<td>Introduction to Analysis of Algorithms</td>
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<tr>
<td>CS 430</td>
<td>Database Systems</td>
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<tr>
<td>CS 440</td>
<td>Introduction to Artificial Intelligence</td>
<td>4</td>
</tr>
<tr>
<td>CS 453</td>
<td>Introduction to Compiler Construction</td>
<td>4</td>
</tr>
<tr>
<td>CS 455</td>
<td>Introduction to Distributed Systems</td>
<td>4</td>
</tr>
<tr>
<td>CS 475</td>
<td>Parallel Programming</td>
<td>4</td>
</tr>
<tr>
<td>CS 510</td>
<td>Image Computation</td>
<td>4</td>
</tr>
<tr>
<td>CS 520</td>
<td>Analysis of Algorithms</td>
<td>4</td>
</tr>
<tr>
<td>CS 540</td>
<td>Artificial Intelligence</td>
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<tr>
<td>CS 545</td>
<td>Machine Learning</td>
<td>4</td>
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<tr>
<td>CS 556</td>
<td>Computer Security</td>
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ECE 4** Any ECE Course at the 400-level
Select any course from the following:  

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<th>Var.</th>
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<tbody>
<tr>
<td>ECE 495A</td>
<td>Independent Study</td>
<td></td>
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<tr>
<td>ECE 495B</td>
<td>Independent Study: Open Option Project</td>
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<tr>
<td>ECE 495C</td>
<td>Independent Study: Vertically Integrated Projects</td>
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</table>

ECE 5** Any ECE Course at the 500-level

<table>
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<tr>
<td>MATH 419</td>
<td>Introduction to Complex Variables</td>
<td>3</td>
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<tr>
<td>MATH 450</td>
<td>Introduction to Numerical Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 451</td>
<td>Introduction to Numerical Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 470</td>
<td>Euclidean and Non-Euclidean Geometry</td>
<td>3</td>
</tr>
<tr>
<td>PH 315</td>
<td>Modern Physics Laboratory</td>
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</tr>
<tr>
<td>PH 425</td>
<td>Advanced Physics Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>PH 451</td>
<td>Introductory Quantum Mechanics I</td>
<td>3</td>
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<tr>
<td>PH 452</td>
<td>Introductory Quantum Mechanics II</td>
<td>3</td>
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<tr>
<td>PH 462</td>
<td>Statistical Physics</td>
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**Science/Math/Engineering Electives**

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<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<tr>
<td>BIOM 101</td>
<td>Introduction to Biomedical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td>4</td>
</tr>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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<td>BMS 325</td>
<td>Cellular Neurobiology</td>
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<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<td>BZ 310</td>
<td>Cell Biology</td>
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<td>CBE 101</td>
<td>Chemical and Biological Engineering I</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<tr>
<td>CIVE 102</td>
<td>Introduction: Civil/Environmental Engineering</td>
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<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
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<tr>
<td>CS 122</td>
<td>Theory for Introductory Programming</td>
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<tr>
<td>CS 155</td>
<td>Introduction to Unix</td>
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<tr>
<td>CS 156</td>
<td>Introduction to C Programming I</td>
<td>1</td>
</tr>
<tr>
<td>CS 157</td>
<td>Introduction to C Programming II</td>
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</tr>
<tr>
<td>CS 161</td>
<td>Object-Oriented Problem Solving</td>
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<tr>
<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
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</tr>
<tr>
<td>or CS 200</td>
<td>Algorithms and Data Structures</td>
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<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
<td>4</td>
</tr>
<tr>
<td>CS 253</td>
<td>Software Development with C++</td>
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</table>

Select any course from the following:  

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ECE 395A</td>
<td>Independent Study</td>
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<tr>
<td>ECE 395B</td>
<td>Independent Study: Open Option Project</td>
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</tr>
<tr>
<td>ECE 395C</td>
<td>Independent Study: Vertically Integrated Project</td>
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<tr>
<td>HES 307</td>
<td>Biomechanical Principles of Human Movement</td>
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<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
<td>4</td>
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<tr>
<td>MATH 151</td>
<td>Mathematical Algorithms in Matlab I</td>
<td>1</td>
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<tr>
<td>MATH 229</td>
<td>Matrices and Linear Equations</td>
<td>2</td>
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<tr>
<td>MATH 317</td>
<td>Advanced Calculus of One Variable</td>
<td>4</td>
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<tr>
<td>MATH 332</td>
<td>Partial Differential Equations</td>
<td>3</td>
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<tr>
<td>MATH 366</td>
<td>Introduction to Abstract Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
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</table>
MECH 101  Introduction to Mechanical Engineering  3
MECH 200  Introduction to Manufacturing Processes  3
MECH 237  Introduction to Thermal Sciences  5
MECH 303  Energy Engineering  3
MECH 337  Thermodynamics  4
MIP 300  General Microbiology  3
PH 314  Introduction to Modern Physics  4
PH 341  Mechanics  4
PH 353  Optics and Waves  4

1 Free elective credits can be satisfied by completing courses 100 level or above. Student use up to 4 credits of free electives to reach the required total of 129 program credits.

2 Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student's four-year program.

3 CS 155, CS 156, and CS 157 count as Science/Math/Engineering electives ONLY when CS 163 or CS 164 is also taken. CS 163 or CS 164 will be applied toward the freshman year requirement.

4 A total 6 credits of Independent Study may apply toward degree requirements. This includes credit awarded for ECE 395A, ECE 395B, ECE 395C and ECE 495A ECE 495B, ECE 495C combined.

5 Credit not allowed for both MECH 237 and MECH 337.

## Major Completion Map

### Distinctive Requirements for Degree Program:

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for this major assumes students enter college prepared to take calculus. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student's four-year program. In order to maintain professional standards required of practicing engineers, the Department of Electrical and Computer Engineering requires a cumulative grade point average of at least 2.000 in electrical engineering courses as a graduation requirement. It is the responsibility of any student who fails to maintain a 2.000 average to work with his or her adviser to correct grade point deficiencies. In addition, it is required that students retake any electrical engineering course at the 300 level or below in which they receive a grade below C.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<td>ECE 102</td>
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</tr>
<tr>
<td>MATH 160</td>
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<td>X</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>X</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Elective</td>
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<td>3-4</td>
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<tr>
<td>PLI Workshop(s)</td>
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Total Credits  17-18

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<tr>
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<tr>
<td>MATH 161</td>
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<td>X</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>PH 141</td>
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<td>X</td>
<td>3A</td>
<td>5</td>
</tr>
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<td>Select one group from the following: Group A:</td>
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<tr>
<td>CS 155</td>
<td>Introduction to Unix</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CS 156</td>
<td>Introduction to C Programming I</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CS 157</td>
<td>Introduction to C Programming II</td>
<td></td>
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CS 163 or 164  Java (CS1) No Prior Programming
Java (CS1) Prior Programming  X

| Total Credits | 15-16 |

**Sophomore**

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| Total Credits | 16 |

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<td>MATH 345  Differential Equations  X</td>
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| Total Credits | 15 |

**Junior**

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<tr>
<td>ECE 331  Electronics Principles I  X</td>
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<tr>
<td>ECE 341  Electromagnetic Fields and Devices I  X</td>
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| Total Credits | 16 |

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<td>ECE 342  Electromagnetic Fields and Devices II  X</td>
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<tr>
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<tr>
<td>Global and Cultural Awareness  X</td>
<td>3E</td>
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<td>PLI Workshop(s)</td>
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| Total Credits | 16 |

**Senior**

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<td>Arts and Humanities  X</td>
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<td>Technical Electives (See List on Concentration Requirements Tab)  X</td>
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| Total Credits | 15 |

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<td>ECON 202  Principles of Microeconomics (GT-SS1)  X</td>
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</table>
Arts and Humanities X 3B 3
Technical Electives (See List on Concentration Requirements Tab) X 9
PLI Workshop(s) X

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 18

Program Total Credits: 129

Major in Electrical Engineering, Lasers and Optical Engineering Concentration

Lasers and Optical Engineering focuses on optics and waves, optical electronics, optical information processing, and communications.

Requirements

Effective Fall 2016

Lasers and Optical Engineering students take three additional physics courses, senior-level courses in optical electronics and optical processing, and technical electives in the optical area.

Freshman

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<thead>
<tr>
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<td>CS 155</td>
<td>Introduction to Unix</td>
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<td>CS 156</td>
<td>Introduction to C Programming I</td>
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<td>CS 157</td>
<td>Introduction to C Programming II</td>
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<tr>
<td>Group B:</td>
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<tr>
<td>CS 163 or 164</td>
<td>Java (CS1) No Prior Programming</td>
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<tr>
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<td>Java (CS1) Prior Programming</td>
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<td>ECE 102</td>
<td>Digital Circuit Logic</td>
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<td>ECE 103</td>
<td>DC Circuit Analysis</td>
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<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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Sophomore

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<td>General Chemistry I (GT-SC2)</td>
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<td>ECE 202</td>
<td>Circuit Theory Applications</td>
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<tr>
<td>ECE 303/STAT 303</td>
<td>Introduction to Communications Principles</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
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<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
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<td>Introduction to Modern Physics</td>
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Major in Electrical Engineering, Lasers and Optical Engineering Concentration

Additional Requirements for Graduation

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Junior

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<td>Linear System Analysis I</td>
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<td>ECE 331</td>
<td>Electronics Principles I</td>
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<td>ECE 332</td>
<td>Electronics Principles II</td>
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<td>ECE 341</td>
<td>Electromagnetic Fields and Devices I</td>
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<tr>
<td>ECE 342</td>
<td>Electromagnetic Fields and Devices II</td>
<td>3</td>
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<tr>
<td>PH 353</td>
<td>Optics and Waves</td>
<td>4</td>
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<td>Arts and Humanities</td>
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<td>Global and Cultural Awareness</td>
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Total Credits 33

Senior

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<tr>
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<td>ECE 404</td>
<td>Experiments in Optical Electronics</td>
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<td>ECE 441</td>
<td>Optical Electronics</td>
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<td>ECE 457</td>
<td>Fourier Optics</td>
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<td>Introductory Quantum Mechanics I</td>
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Total Credits 32

Program Total Credits: 125-126

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<td>Bioprocess Engineering</td>
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<td>Principles of Human Physiology</td>
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<td>Cellular Neurobiology</td>
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CS 220  Discrete Structures and their Applications  4
CS 253  Software Development with C++  4
CS 370  Operating Systems  3

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<td>Partial Differential Equations</td>
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**Code**  
**Title**  
**Credits**

**Technical Electives**

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<td>Digital Control and Digital Filters</td>
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<td>Antennas and Radiation</td>
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<td>Digital System Design Laboratory</td>
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<td>Semiconductor Junctions</td>
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<td>ECE 495C</td>
<td>Independent Study: Vertically Integrated Projects</td>
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<td>ECE 503</td>
<td>Ultrafast Optics</td>
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<td>ECE 504</td>
<td>Physical Optics</td>
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<td>ECE 505</td>
<td>Nanostructures: Fundamentals and Applications</td>
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<td>ECE 506</td>
<td>Optical Interferometry and Laser Metrology</td>
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<td>ECE 507</td>
<td>Plasma Physics and Applications</td>
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<td>Optimization Methods-Control and Communication</td>
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<td>Laser Fundamentals and Devices</td>
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<td>ECE 574</td>
<td>Optical Properties in Solids</td>
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<tr>
<td>ECE 575</td>
<td>Experiments in VLSI System Design I</td>
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<td>ECE 58*</td>
<td>Experimental Courses in Lasers/Optics Topics</td>
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<td>MATH 419</td>
<td>Introduction to Complex Variables</td>
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<tr>
<td>PH 315</td>
<td>Modern Physics Laboratory</td>
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</table>
### Major Completion Map

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

1 CS 155, CS 156, and CS 157 count as Science/Engineering electives ONLY when CS 163 or CS 164 is also taken. CS 163 or CS 164 will be applied to the freshman year selection requirement.

Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s four-year program.

2 Project must be a laser and optical engineering topic.

A total 3 credits of Independent Study may apply toward degree requirements. This includes credit awarded for ECE 395A, ECE 395B, ECE 395C and ECE 495A, ECE 495B, ECE 495C combined.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<td>ECE 102 Digital Circuit Logic</td>
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<tr>
<td>CO 150 College Composition (GT-CO2)</td>
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<td>MATH 160 Calculus for Physical Scientists I (GT-MA1)</td>
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<td>Historical Perspectives</td>
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<td>PLI Workshop(s)</td>
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<td>ECE 103 DC Circuit Analysis</td>
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<td>Group A:</td>
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<td>CS 155 Introduction to Unix</td>
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<tr>
<td>CS 156 Introduction to C Programming I</td>
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<td>CS 163 or 164 Java (CS1) No Prior Programming</td>
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<td>Java (CS1) Prior Programming</td>
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### Sophomore

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<tbody>
<tr>
<td>MATH 261 Calculus for Physical Scientists III</td>
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<td>PH 142 Physics for Scientists and Engineers II (GT-SC1)</td>
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<td>CHEM 111 General Chemistry I (GT-SC2)</td>
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<td>ECON 202 Principles of Microeconomics (GT-SS1)</td>
<td>X</td>
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<td>Semester 4</td>
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<td>ECE 202</td>
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| Total Credits | 16 |

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<td>ECE 331</td>
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<td>PH 353</td>
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<td>Global and Cultural Awareness</td>
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| Total Credits | 20 |

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<tr>
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<td>ECE 342</td>
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| Total Credits | 16 |

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<td>ECE 404</td>
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<td>ECE 441</td>
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<td>PH 451</td>
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<td>Technical Electives (See List on Concentration Requirements Tab)</td>
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| Total Credits | 14 |

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<td>ECE 457</td>
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<td>Technical Electives (See List on Concentration Requirements Tab)</td>
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<td>PLI Workshop(s)</td>
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| Total Credits | 15 |

Program Total Credits: 125-126
Master of Science in Electrical Engineering, Plan A

Requirements

Grandfather

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A minimum of 30 credits are required to complete this program.

1) Courses not accepted as regular include all courses ending in -82 to -99. Only 6 credits allowed at the 400-level.

2) Select courses with approval of advisor and graduate committee.

Master of Science in Electrical Engineering, Plan B

Requirements

Grandfather

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<td>ECE 695</td>
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</table>

A minimum of 30 credits are required to complete this program.

1) Courses not accepted as regular include all courses ending in -82 to -99. Only 6 credits allowed at the 400-level.

2) Select courses with approval of advisor and graduate committee.

Department of Mechanical Engineering

Engineering Building, Room A103
(970) 491-6558; (970) 491-0924
engr.colostate.edu/me (http://www.engr.colostate.edu/me)

Professor Susan P. James, Head
Toni-Lee Viney, Manager of Undergraduate Programs
Tiarah Marshall, Lead Academic Advisor & Academic Support Coordinator
Star Garcia, Undergraduate Advisor
Megan Kosovski, Graduate Program Coordinator

Undergraduate

Majors

- Major in Mechanical Engineering
- Major in Biomedical Engineering and Mechanical Engineering

Graduate

Graduate Programs in Mechanical Engineering

Programs are offered leading to the Master of Science, Master of Engineering (Mechanical Engineering specialization), and Doctor of Philosophy. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Mechanical Engineering (http://www.engr.colostate.edu/me).

Master Programs

- Master of Science in Mechanical Engineering, Plan A
- Master of Science in Mechanical Engineering, Plan B
- Master of Engineering, Plan C, Mechanical Engineering Specialization

Ph.D.

- Ph.D. in Mechanical Engineering

Courses

Mechanical Engineering (MECH)

MECH 101 Introduction to Mechanical Engineering Credits: 3 (3-0-0)
Course Description: The discipline of Mechanical Engineering as described in problems and problem solving methods-energy, materials, motion, fluids.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 103 Introduction to Mechanical Engineering Credits: 3 (3-0-0)
Course Description: The discipline of Mechanical Engineering as described in problems and problem solving methods-energy, materials, motion, fluids.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 105 Mechanical Engineering Problem Solving Credits: 3 (3-0-0)
Course Description: Programming and engineering problem solving techniques, algorithms and processes from physics and calculus first principles.
Prerequisite: MECH 103 and MATH 160 and PH 141, may be taken concurrently.
Registration Information: Credit not allowed for both MECH 105 and MECH 102.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 200 Introduction to Manufacturing Processes Credits: 3 (2-2-0)
Course Description: Engineering drawings, materials, manufacturing, and safety. Hand tools, cutting, drilling, the lathe, mill and numerical control.
Prerequisite: None.
Registration Information: Mechanical engineering and engineering science majors only. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 201 Engineering Design I Credits: 2 (1-2-0)
Course Description: Engineering design process and the roles of visual communication with emphasis on 3D physical solid modelers and Pro/ENGINEER.
Prerequisite: MECH 105.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 202 Engineering Design II Credits: 3 (2-2-0)
Course Description: Engineering design process with emphasis on teamwork, ideation, decision-making, project planning applied to a group design project.
Prerequisite: MECH 201 and MECH 200, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 231 Engineering Experimentation Credits: 3 (2-2-0)
Course Description: Measurement systems; experimental design; data acquisition and analysis techniques.
Prerequisite: (MECH 102 or MECH 105) and (PH 142).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 237 Introduction to Thermal Sciences Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics, properties of materials, energy conversion, statistical aspects, heat transfer.
Prerequisite: PH 141 and MATH 160.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 252 Engineering Mechanics Credits: 4 (4-0-0)
Course Description: Forces, static equilibrium, mass center, moments of inertia, kinematics and kinetics of particles and rigid bodies.
Prerequisite: (MATH 161) and (PH 141).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 301 Engineering Design III Credits: 2 (1-2-0)
Course Description: Computer-aided engineering tools FEA and CFD for analysis and prediction of robustness and performance of mechanical components and assemblies.
Prerequisite: (CIVE 360) and (MECH 202, may be taken concurrently) and (MECH 342).
Registration Information: Credit not allowed for both MECH 301 and MECH 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 302 Engineering Design III Credits: 3 (3-0-0)
Course Description: Design fundamentals, including design processes, project planning, creativity, manufacturing, and human factors.
Prerequisite: CIVE 360 and MECH 202 and MECH 324 and MECH 337 and MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 303 Energy Engineering Credits: 3 (3-0-0)
Course Description: Energy generation (coal, oil, natural gas, solar, wind, geothermal, hydropower, tidal, biofuel, nuclear...), conversion, distribution, storage, efficiency.
Prerequisite: CBE 310 or ECE 341 or MECH 237 or MECH 337 or PH 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 307 Mechatronics and Measurement Systems Credits: 4 (3-3-0)
Course Description: Mechatronic and measurement systems analysis and design; applied electronics; data acquisition; microcontroller interfacing and programming.
Prerequisite: CIVE 261 and ECE 204 and MATH 340 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 324 Dynamics of Machines Credits: 4 (3-2-0)
Course Description: Analysis and synthesis of moving machinery.
Prerequisite: CIVE 261 and MATH 340, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 325 Machine Design Credits: 3 (3-0-0)
Course Description: Design of mechanical components to avoid failure during operation. Stress analysis, failure theories, and specific mechanical components in design context.
Prerequisite: CIVE 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 331 Introduction to Engineering Materials  Credits: 4 (3-2-0)
Course Description: Characteristics of metallic, plastic, and ceramic material; basic principles which relate properties of materials to their atomic and microstructure.
Prerequisite: CHEM 111 and CHEM 112 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 337 Thermodynamics Credits: 4 (3-0-1)
Course Description: First and second laws, property relationships, characteristic functions, thermodynamics solver, various thermodynamics applications.
Prerequisite: MATH 261 and PH 141.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 338 Thermal/Fluid Sciences Laboratory Credit: 1 (0-3-0)
Course Description: Experimental methods in heat transfer, fluid flow, and thermodynamics.
Prerequisite: MECH 337 and MECH 342.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 342 Mechanics and Thermodynamics of Flow Processes Credits: 3 (3-0-0)
Course Description: Engineering details of viscous flow with losses, measurements, compressibility, turbomachinery, convective heat transfer.
Prerequisite: MATH 340 and PH 141 and MECH 337, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 344 Heat and Mass Transfer Credits: 3 (3-0-0)
Course Description: Transport and rate processes, conduction, convection, and radiation.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 392 Graduate Education and Research Seminar Credit: 1 (0-0-1)
Course Description: Research in graduate school and industry as a career option for mechanical engineers.
Prerequisite: MECH 231 and MECH 237.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 402 Mechanical Engineering Experimental Analysis Credits: 3 (2-2-0)
Course Description: Analysis of large data sets associated with mechanical engineering experimentation; optimization; variability; design of experiments.
Prerequisite: (MECH 307) and (MECH 324) and (MECH 331) and (MECH 338).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 407 Laser Applications in Mechanical Engineering Credits: 3 (3-0-0)
Course Description: Review of electromagnetic waves; applications of lasers and optics in engineering, e.g., position sensing, flowfield measurement, cutting and welding.
Prerequisite: PH 142.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 408 Applied Engineering Economy Credits: 3 (2-0-1)
Course Description: The basic principles and calculations of engineering economy with application to real problems, including energy and the environment.
Prerequisite: MATH 161.
Registration Information: Credit not allowed for both MECH 408 and MECH 410.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 410 Engineering Economy Principles/Calculations Credit: 1 (0-0-1)
Course Description: Basic principles and calculation of engineering economy.
Prerequisite: MATH 161.
Registration Information: Credit not allowed for both MECH 410 and MECH 408. Offered as an online course only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 411 Manufacturing Engineering Credits: 3 (3-0-0)
Course Description: Casting, forming, machining, and welding processes used in manufacturing operations.
Prerequisite: CIVE 360 and MECH 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 417 Control Systems Credits: 3 (2-2-0)
Course Description: Feedback and forward loop control design and simulation; discrete time and frequency domain methods with implementation considerations.
Prerequisite: MATH 340 and MECH 307.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
MECH 424 Advanced Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid bodies. Hamilton's principle and Lagrange's equations for lumped parameter extended bodies and distributed systems.
Prerequisite: MECH 324.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 425 Mechanical Engineering Vibrations Credits: 4 (3-2-0)
Course Description: Vibrations applied to rotating machinery and structures. SDOF and MDOF systems, mode shapes, vibration measurements and control. Hands-on lab.
Prerequisite: MECH 324.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 431 Metals and Alloys Credits: 3 (3-0-0)
Course Description: Engineering metals and alloys, modification of properties by alloying, plastic deformation, and heat treatment. Fundamentals of physical metallurgy.
Prerequisite: MECH 331.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 432 Engineering of Nanomaterials Credits: 3 (3-0-0)
Course Description: Structure, properties, and processing of extremely small (10 to the minus 9 m) synthetic and natural materials.
Prerequisite: MECH 331.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 433 Internal Combustion Engines Credits: 3 (2-0-1)
Course Description: Application of thermodynamics, heat transfer, and fluid mechanics to internal combustion engines.
Prerequisite: MECH 344.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 460 Aeronautics Credits: 3 (3-0-0)
Course Description: Thermodynamics and fluid mechanics principles applied to the mechanics, aerodynamics, performance, stability, and control of airplanes.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 463 Building Energy Systems Credits: 3 (3-0-0)
Course Description: Comfort, psychrometrics, loads, solar radiation, heating and cooling system design, transport, solar system design, economics.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 468 Space Propulsion and Power Engineering Credits: 3 (3-0-0)
Course Description: Orbital mechanics and space missions; chemical, nuclear, and electric rockets; nuclear heat sources; thermoelectric and photovoltaic devices.
Prerequisite: ECE 204 and MECH 337 and MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 470 Biomedical Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 470.
Course Description: Engineering application in human/animal physiology, diagnosis of disease, treatment, rehabilitation, human genome manipulation.
Prerequisite: (MATH 155 or MATH 160) and (PH 141).
Registration Information: Credit not allowed for both MECH 470 and BIOM 470.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 486A Engineering Design Practicum: I Credits: 4 (1-12-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: MECH 301 and MECH 325 and MECH 344 and MECH 402, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 486B Engineering Design Practicum: II Credits: 4 (1-12-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: MECH 338 and MECH 486A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 499 Engineering Research Practicum: Fall Credits: 4 (1-12-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: MECH 301 and MECH 325 and MECH 402, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 498B  Engineering Research Practicum: Spring  Credits: 4 (1-12-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: MECH 338 and MECH 498A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 501  Engineering Project and Program Management Credits: 3 (0-0-3)
Course Description: Engineering program management fundamentals, program planning and control strategies, risk assessment, work breakdown structures and costing options.
Prerequisite: None.
Registration Information: Admission to the M.E. program. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 502  Advanced/Additive Manufacturing Engineering Credits: 3 (3-0-0)
Course Description: Materials, controls, and mechanics applied to additive manufacturing; rapid prototyping; direct digital manufacturing.
Prerequisite: MECH 202 and MECH 331.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 503  Engineering Maintenance Process Credits: 3 (0-0-3)
Course Description: Design for engineering maintainability development and management of effective maintenance programs applicable to typical industrial environments.
Prerequisite: None.
Registration Information: Admission to the M.E. program. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 504  Specification and Procurement of Engr Systems Credits: 3 (0-0-3)
Course Description: Specification and procurement of engineering systems, including contracts, legal, ethics and Statement of Work development.
Prerequisite: None.
Registration Information: Admission to the M.E. program. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 507  Laser Diagnostics for Thermosciences Credits: 3 (3-0-0)
Course Description: Basics of optics, spectroscopy, and lasers. Physics and applications of laser diagnostic techniques used in thermosciences.
Prerequisite: PH 142.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 509  Design and Analysis in Engineering Research Credits: 3 (3-0-0)
Course Description: Design, model building, analysis and reporting in engineering and manufacturing research and experimentation.
Prerequisite: MATH 340 and STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 511  Engineering Decision Making Under Uncertainty Credits: 3 (3-0-0)
Course Description: Systems engineering and engineering economic methodologies for evaluating interdependent capital expenditure proposals under incomplete information.
Prerequisite: MECH 410 and STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 512  Reliability Engineering Credits: 3 (3-0-0)
Course Description: Models to predict time to failure of mechanical or electronic devices, reliability data analysis and case studies.
Prerequisite: STAT 315 and MECH 513.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 513  Simulation Modeling and Experimentation Credits: 3 (3-0-0)
Course Description: Logic/analytic modeling in simulations. Event and transient entity-based simulation languages. Simulation design, experimentation and analysis.
Prerequisite: STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 520  Finite Element Analysis in Mechanical Engr Credits: 3 (3-0-0)
Course Description: Application of FEA as a tool to analyze mechanical engineering problems.
Prerequisite: (CIVE 360) and (MATH 340 or MATH 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 523  Vehicle Energy Storage System Design Credits: 3 (3-0-0)
Course Description: Develop vehicle system designs utilizing electrochemical energy storage systems such as batteries and capacitors.
Prerequisite: MECH 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 524  Principles of Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid body motion; Lagrangian and Hamiltonian formulations of mechanics; applications to engineering problems.
Prerequisite: MECH 324.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 525  Cell and Tissue Engineering  Credits: 3 (3-0-0)
Also Offered As: BIOM 525.
Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.
Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.
Registration Information: Credit only allowed for one of the following: MECH 525, BIOM 525, and CBE 525. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 526  Fundamentals of Vehicle Dynamics  Credits: 3 (3-0-0)
Course Description: Kinetics of vehicle suspensions, steady-state and transient stability and control, tires, wheel and suspension geometry and loads, dampers, steering.
Prerequisite: MECH 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 527  Hybrid Electric Vehicle Powertrains  Credits: 3 (3-0-0)
Course Description: Hybrid powertrains and modeling including vehicle dynamics, internal combustion engine, electric motor, energy storage, and control.
Prerequisite: MECH 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 529  Advanced Mechanical Systems  Credits: 3 (3-0-0)
Course Description: Modeling, analysis, and synthesis of practical mechanical devices in which dynamic response is dominant consideration.
Prerequisite: MECH 307.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 530  Advanced Composite Materials  Credits: 3 (3-0-0)
Course Description: Materials aspects of advanced composite constituents and how their combination yields synergistic results.
Prerequisite: CIVE 360 and MECH 337.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 531  Materials Engineering  Credits: 3 (3-0-0)
Also Offered As: BIOM 531.
Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.
Prerequisite: MECH 331 or MECH 431.
Registration Information: Credit not allowed for both MECH 531 and BIOM 531. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 532  Materials Issues in Mechanical Design  Credits: 3 (3-0-0)
Also Offered As: BIOM 532.
Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue, and corrosion.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both MECH 532 and BIOM 532. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 538  Mechanical Engineering Thermodynamics  Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics applied to engineering devices and systems. Introduction to availability, energy, and lost work analysis.
Prerequisite: MECH 337.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 539  Advanced Fluid Mechanics  Credits: 3 (3-0-0)
Course Description: Properties, kinematics; vorticity; exact solutions; instability; boundary layers; turbulence; wakes; compressible flow; supersonic flow; shockwaves.
Prerequisite: CIVE 300 or MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 543  Biofluid Mechanics  Credits: 3 (3-0-0)
Course Description: Fluid dynamic concepts for understanding fluid motion in living organs/organisms; advanced research applications.
Prerequisite: MECH 342 or CIVE 300 or BMS 300 and PH 121 or BMS 300 and PH 141 or BMS 420.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 544  Advanced Heat Transfer  Credits: 3 (3-0-0)
Course Description: Fundamentals and engineering applications of heat transfer including conduction, convection, and radiation.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 551  Physical Gas Dynamics I  Credits: 3 (3-0-0)
Course Description: Characteristics of real gases in reacting and nonequilibrium systems; equilibrium air; statistical mechanics, chemical thermodynamics.
Prerequisite: MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 552  Applied Computational Fluid Dynamics  Credits: 3 (3-0-0)
Course Description: Introductory theory of CFD, formulation of engineering problems for CFD analyses, mesh generation, solver settings, and postprocessing.
Prerequisite: CIVE 300 or CBE 331 or MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
MECH 557  Turbomachinery  Credits: 3 (3-0-0)
Course Description: Application of fundamental principles of thermodynamics and fluid mechanics to turbomachinery.
Prerequisite: MECH 337 and MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 558  Combustion  Credits: 3 (3-0-0)
Course Description: Combustion processes: explosions, detonations, flame propagation, ignition, generation of pollutants in moving and stationary energy conversion systems.
Prerequisite: MECH 342.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 564  Fundamentals of Robot Mechanics and Controls  Credits: 3 (3-0-0)
Course Description: Kinematics of robots, controls for robots.
Prerequisite: MECH 417.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 567  Broad-Beam Ion Sources  Credits: 3 (3-0-0)
Course Description: Physical processes in broad-beam electron-bombardment ion sources for space propulsion and ion machining applications.
Prerequisite: MATH 340.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 568  Computational Methods for Mechanical Eng.  Credits: 3 (3-0-0)
Course Description: Fundamental principles which provide the foundation for the software and algorithms used in Mechanical Engineering.
Prerequisite: MATH 450 or MATH 451.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 569  Micro-Electro-Mechanical Devices  Credits: 3 (3-0-0)
Also Offered As: ECE 569.
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: MECH 344 with a minimum grade of C or ECE 331 with a minimum grade of C.
Registration Information: Credit not allowed for both MECH 569 and ECE 569. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 570  Bioengineering  Credits: 3 (3-0-0)
Also Offered As: BIOM 570.
Course Description: Physiological and medical systems analysis using engineering methods including mechanics, fluid dynamics, control, electronics, and signal processing.
Prerequisite: MECH 307 and MECH 324.
Registration Information: Credit not allowed for both MECH 570 and BIOM 570. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 573  Structure and Function of Biomaterials  Credits: 3 (3-0-0)
Also Offered As: BIOM 573.
Course Description: Structure-function relationships of natural biomaterials; application to analysis of biomimetic materials and biomaterials used in medical devices.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both MECH 573 and BIOM 573. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 574  Bio-Inspired Surfaces  Credits: 3 (3-0-0)
Also Offered As: BIOM 574.
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 575  Solar and Alternative Energies  Credits: 3 (3-0-0)
Course Description: Solar radiation, flat-plate collectors, energy storage, space heating and cooling, power generation, applications, simulation.
Prerequisite: MECH 337 and MECH 342 and MECH 344.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 576  Quantitative Systems Physiology  Credits: 4 (4-0-0)
Also Offered As: BIOM 576.
Course Description: Quantitative, model-oriented approach to cellular and systems physiology with design examples from biomedical engineering.
Prerequisite: BMS 300 and CHEM 113 and MATH 340 and PH 142.
Registration Information: Credit not allowed for both BIOM 576 and MECH 576. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 577  Applied Fracture Mechanics  Credits: 3 (3-0-0)
Course Description: Stress distribution near cracks; energy criteria for fracture; design criteria; fracture toughness testing.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
MECH 657  Advanced Computational Gas Dynamics  Credits: 4 (3-2-0)
Course Description: Advanced computational algorithms for gas
dynamics.
Prerequisite: MECH 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 658  Advanced Combustion Theory and Modeling  Credits: 3 (3-0-0)
Course Description: Asymptotic structure of flames, limit phenomena and
multi-phase combustion.
Prerequisite: MECH 558.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 661  Theory/Control of Internal Combustion Engines  Credits: 3 (3-0-0)
Course Description: Theory and applications of internal combustion
engines. Alternative fuels, engine control, and pollution prevention.
Prerequisite: MECH 437.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 671  Orthopedic Tissue Biomechanics  Credits: 3 (3-0-0)
Course Description: Linear elastic, finite deformation, and viscoelastic
theories applied to the mechanical behavior of orthopedic tissues (bone,
tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both MECH 671 and
BIOM 671 or for MECH 571/Biom 571.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 692  Seminar  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695A  Independent Study: Bioengineering  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695B  Independent Study: Energy Conversion  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695C  Independent Study: Environmental Engineering  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695D  Independent Study: Heat and Mass Transfer  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695E  Independent Study: Industrial and Systems Engineering  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695F  Independent Study: Mechanics and Design  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695G  Independent Study: Computer-Assisted Engineering  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695H  Independent Study: Robotics  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MECH 695I Independent Study: Solar Engineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695J Independent Study: Computational Fluids Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695K Independent Study: Materials Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695L Independent Study: Plasma Engineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695M Independent Study: Motorsport Engineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 699A Thesis: Bioengineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699B Thesis: Energy Conversion Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699C Thesis: Environmental Engineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699D Thesis: Heat and Mass Transfer Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699E Thesis: Industrial and Systems Engineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699F Thesis: Mechanics and Design Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699G Thesis: Computer-Assisted Engineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699H Thesis: Robotics Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699I Thesis: Solar Engineering Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699J Thesis: Computational Fluids Credits: Var\[1-18\] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
MECH 699K Thesis: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699L Thesis: Plasma Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 699M Thesis: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 721 Special Topics in Design and Manufacturing Credits: Var[1-18] (0-0-0)
Course Description: Special topics in engineering design and manufacturing.
Prerequisite: MECH 514 or MECH 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 729 Special Topics in Mechanics and Materials Credits: 3 (3-0-0)
Course Description: Advanced topics in discipline of engineering mechanics and materials; associated analysis and manufacturing techniques.
Prerequisite: MECH 524 or MECH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799A Dissertation: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799B Dissertation: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799C Dissertation: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799D Dissertation: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799E Dissertation: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799F Dissertation: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799H Dissertation: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
Mechanical engineers are creative problem solvers who design, develop, manufacture the machines and instrumentation that run energy, building, environmental, and transportation systems. Examples include biomedical devices, ground/air/space vehicles, robots, environmental control equipment, and power plants.

Major in Mechanical Engineering

Is making a difference important to you? Would you enjoy the challenge of inventing sustainable energy devices, doing computer-aided product design, or biomedical research? Does creating new designs for the hybrid electric vehicle industry, or new airplanes in the fields of aeronautics and aerospace sound interesting? Would designing or doing research in bioengineering areas? Participation in labs further develops design, modeling, and analysis skills.

Mechanical Engineering at CSU is dedicated to graduating ethical mechanical engineers who:

- Make an impact on society’s global grand engineering challenges
- Are innovative and creative engineering designers who identify, analyze, and solve complex problems
- Are accomplished thinkers with hands-on practical skills
- Are local, regional, and global collaborators and communicators
- Are vested in life-long learning

Student Outcomes

Graduates of the undergraduate Mechanical Engineering program will have:

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multidisciplinary teams
- An ability to identify, formulate, and solve engineering problems
- An understanding of professional and ethical responsibility
- An ability to communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- A recognition of the need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Potential Occupations

Graduates from the Department of Mechanical Engineering are expected to have the fundamental knowledge required for the successful practice of mechanical engineering. CSU engineering graduates are generally well prepared for a professional career with a greater than 90% pass rate on the Fundamentals of Engineering professional examination. Participating in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Students who go on for graduate studies can attain more responsible positions with the possibility of rising to top professional levels.

Requirements
# Effective Fall 2014

## Freshman

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**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**TO DECLARE MAJOR:** Competitive entry controls required and capped enrollment in place. Incoming students please see the Office of Admissions to declare. Current CSU students please see your assigned advisor for information about the waitlist.

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for the this major assumes students enter college prepared to take calculus. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student's four-year program.

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<td></td>
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</tr>
<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td></td>
<td>X</td>
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<tr>
<td><strong>Total Credits</strong></td>
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</tbody>
</table>

**Program Total Credits:** 129
Master of Engineering, Plan C, Mechanical Engineering Specialization

Requirements

Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MECH ***</td>
<td>Electives</td>
<td>15</td>
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<tr>
<td>Electives</td>
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<td>15</td>
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<tr>
<td>Total Credits</td>
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</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1 Select courses with approval of advisor.

Of the 30 minimum credits required for this program, at least 24 credits must be at the 500-level or above and earned at CSU.

Master of Science in Mechanical Engineering, Plan A

Requirements

Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select 2 courses from the following:</td>
<td></td>
<td>6-7</td>
</tr>
<tr>
<td>CIVE 560</td>
<td>Advanced Mechanics of Materials</td>
<td></td>
</tr>
<tr>
<td>MATH 530</td>
<td>Mathematics for Scientists and Engineers</td>
<td></td>
</tr>
<tr>
<td>MECH 529</td>
<td>Advanced Mechanical Systems</td>
<td></td>
</tr>
<tr>
<td>MECH 532/</td>
<td>Materials Issues in Mechanical Design</td>
<td></td>
</tr>
<tr>
<td>BIOM 532</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECH 538</td>
<td>Mechanical Engineering Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>MECH 539</td>
<td>Advanced Fluid Mechanics</td>
<td></td>
</tr>
<tr>
<td>MECH 544</td>
<td>Advanced Heat Transfer</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
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</table>

Select one from the following: 6-12

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MECH 699A</td>
<td>Thesis: Bioengineering</td>
<td></td>
</tr>
<tr>
<td>MECH 699B</td>
<td>Thesis: Energy Conversion</td>
<td></td>
</tr>
<tr>
<td>MECH 699C</td>
<td>Thesis: Environmental Engineering</td>
<td></td>
</tr>
<tr>
<td>MECH 699E</td>
<td>Thesis: Industrial and Systems Engineering</td>
<td></td>
</tr>
<tr>
<td>MECH 699F</td>
<td>Thesis: Mechanics and Design</td>
<td></td>
</tr>
<tr>
<td>MECH 699G</td>
<td>Thesis: Computer-Assisted Engineering</td>
<td></td>
</tr>
<tr>
<td>MECH 699H</td>
<td>Thesis: Robotics</td>
<td></td>
</tr>
<tr>
<td>MECH 699I</td>
<td>Thesis: Solar Engineering</td>
<td></td>
</tr>
<tr>
<td>MECH 699J</td>
<td>Thesis: Computational Fluids</td>
<td></td>
</tr>
<tr>
<td>MECH 699K</td>
<td>Thesis: Materials</td>
<td></td>
</tr>
<tr>
<td>MECH 699L</td>
<td>Thesis: Plasma Engineering</td>
<td></td>
</tr>
<tr>
<td>MECH 699M</td>
<td>Thesis: Motorsport Engineering</td>
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</tr>
</tbody>
</table>

Total Credits 30

A minimum of 30 credits are required to complete this program.

Ph.D. in Mechanical Engineering

Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 530</td>
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<td>CIVE 560</td>
<td>Advanced Mechanics of Materials</td>
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<td>MECH 529</td>
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<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
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<td></td>
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<tr>
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</tr>
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<td>MECH 539</td>
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<td></td>
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<tr>
<td>MECH 544</td>
<td>Advanced Heat Transfer</td>
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<tr>
<td>Electives</td>
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<td>23-24</td>
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</table>

Select one from the following: 6-12

<table>
<thead>
<tr>
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<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>MECH 699A</td>
<td>Thesis: Bioengineering</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>MECH 699E</td>
<td>Thesis: Industrial and Systems Engineering</td>
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Electives 2-32

Master Degree Credit 30

Dissertation 30

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH 799A</td>
<td>Dissertation: Bioengineering</td>
<td></td>
</tr>
<tr>
<td>MECH 799B</td>
<td>Dissertation: Energy Conversion</td>
<td></td>
</tr>
<tr>
<td>MECH 799C</td>
<td>Dissertation: Environmental Engineering</td>
<td></td>
</tr>
<tr>
<td>MECH 799D</td>
<td>Dissertation: Heat and Mass Transfer</td>
<td></td>
</tr>
<tr>
<td>MECH 799E</td>
<td>Dissertation: Industrial and Systems Engineering</td>
<td></td>
</tr>
</tbody>
</table>

Select courses with approval of advisor and graduate committee.

Of the 30 minimum credits required for this program, at least 24 credits must be at the 500-level or above and earned at CSU.
MECH 799F  Dissertation: Mechanics and Design
MECH 799G  Dissertation: Computer-Assisted Engineering
MECH 799H  Dissertation: Robotics
MECH 799I  Dissertation: Solar Engineering
MECH 799J  Dissertation: Computational Fluids
MECH 799K  Dissertation: Materials
MECH 799L  Dissertation: Plasma
MECH 799M  Dissertation: Motorsport Engineering

Total Credits 72

A minimum of 72 credits are required to complete this program.

1 Select courses with approval of advisor and graduate committee.

2 A maximum of 30 credits may be accepted from an engineering master's degree.

Of the 72 minimum credits required for this program, at least 21 credits must be at the 500-level or above and earned at CSU. Minimum of 15 credits with the MECH subject code. Minimum 12 credits in regular courses numbered 500 and above (not including dissertation, independent study, or supervised teaching).

School of Biomedical Engineering

Scott Bioengineering Building, Suite 225
engr.colostate.edu/sbme (http://www.engr.colostate.edu/sbme)
(970) 491-7157

Professor Stuart Tobet, Director
Professor Kevin Lear, Associate Director; and Director, Undergraduate Programs

The School of Biomedical Engineering (SBME) is supported by four CSU colleges and more than 40 faculty members in over 10 departments, providing students with broad expertise, active researchers, and excellent instructors. At the graduate level, SBME offers a Master of Science and a Doctor of Philosophy in Bioengineering, and a Master of Engineering (online and on campus) with a specialization in Biomedical Engineering. See the Graduate and Professional Bulletin for graduate program listings. The College of Engineering offers undergraduate programs leading to a Bachelor of Science in Biomedical Engineering and a Bachelor of Science in Chemical & Biological Engineering, a Bachelor of Science in Biomedical Engineering and a Bachelor of Science in Electrical Engineering, and a Bachelor of Science in Biomedical Engineering and a Bachelor of Science in Mechanical Engineering, as well as an undergraduate minor.

See University-Wide Instructional Programs for the interdisciplinary minor.

Biomedical engineering lies at the interface of engineering, biology, and medicine. The SBME provides extensive opportunities for research, ranging from investigating new therapies and imaging modalities for fighting cancer or cardiovascular illness, to examining organ development or function, creating devices to diagnose devastating diseases, to developing the next generation of gene therapies and engineered tissues. CSU is positioned to offer unique bioengineering degree programs due to our faculty expertise, the interdisciplinary nature of the SBME, and the highly-ranked College of Veterinary Medicine and Biomedical Sciences, providing a rich environment for interdisciplinary research and day-to-day collaborations. Our biomedical engineering programs integrate biological, chemical, physical, and mathematical sciences with engineering principles and clinical studies and our graduates are well prepared for careers in research, education, veterinary or human medicine, and industry.

Biomedical engineers are involved in a wide variety of activities on a daily basis. Practical applications of biomedical engineering include doing development, design, production, research, or teaching in areas such as:

- Designing biomedical materials and/or medical devices and equipment (e.g., pacemakers, bio-compatible wheelchairs, exercise equipment for astronauts, or creating/improving materials to help joint replacements last longer)
- Developing or improving therapies for fighting cancer, tuberculosis, or other illnesses and diseases (e.g., nanoscaffolding for localized chemotherapy delivery, telemetric sensors to determine healing rates in bone fractures or to detect key chemicals in live tissue with high temporal and spatial resolution)
- Finding better ways to image and/or diagnose illnesses (e.g., using lasers to detect viruses, developing ways to increase electrical signals to detect threats to food safety and security, designing a biosensor to diagnose cancer cells, or developing software to determine toxicity levels in people exposed to pesticides)

Potential Occupations

Biomedical engineering applies engineering principles to medicine and improving quality of life for humans and animals. Biomedical engineers work in a variety of settings. Some biomedical engineers spend their days in the lab, researching new devices and systems that solve medical and health care-related problems. Others might work in clinical settings, run biomedical-focused enterprises, design new therapies or diagnostics, assist medical facilities with engineering systems, or engage in regulatory affairs or patent law. Our graduates are well prepared for careers in research, education, veterinary, or human medicine.

Undergraduate Bachelor of Science Programs in Biomedical Engineering

The Bachelor of Science program in Biomedical Engineering has four pathways, corresponding to four rigorous traditional coursework plans that provide depth and support the breadth of biomedical knowledge and applications. The coursework in these four pathways is designed not only to support biomedical engineering but also to satisfy the curricular requirements of one of four traditional engineering degrees as administered by partner engineering departments.

The four curricular pathways for the BME B.S. degree are:
• B.S. degree in Biomedical Engineering combined with a B.S. degree in Chemical and Biological Engineering
• B.S. degree in Biomedical Engineering combined with a B.S. degree in Electrical Engineering, Electrical Engineering Concentration
• B.S. degree in Biomedical Engineering combined with a B.S. degree in Electrical Engineering, Laser and Optical Concentration
• B.S. degree in Biomedical Engineering combined with a B.S. degree in Mechanical Engineering

The BME program requires 157 or 158 credit hours of coursework, depending on the selected pathway, nominally distributed over five years.

In the first year, students take BIOM 101 as well as foundational math and science courses. Through the second and third years, they gain a foundation in the traditional engineering major as well as life and physical sciences courses needed for biomedical engineering. The following years allow students to build a more thorough understanding of biomedical engineering, and their studies will culminate in a Senior Design project in the fifth year that will provide hands-on experience with an interdisciplinary team of peers. This combination of practical application and traditional academic rigor complement the breadth and depth of this fairly unique program, and provides excellent preparation and market value for graduates’ next steps in industry, academia, or research.

With the first BME graduates in Spring 2015, the BME program became eligible to apply for ABET (http://www.abet.org) accreditation, a process that spans two years. SBME has been visited by evaluators and submitted all documentation and is awaiting a decision in late summer 2016. If accreditation is granted, it will be retroactive for earlier graduates of the program. Please visit www.engr.colostate.edu/sbme/accreditation.html(http://www.engr.colostate.edu/sbme/accreditation.html) to learn the current status of accreditation for the BME program. The educational objectives of the biomedical engineering program are to prepare our students to:

• Demonstrate high professional, social, and ethical standards while examining and addressing the global impact of technology to improve quality of life in our society and environment
• Apply broad and deep knowledge, practical experiences, and creativity to solving problems at the interface of engineering and the life sciences as individuals and team members
• Use their multidisciplinary background to foster communication and collaboration across professional and disciplinary boundaries
• Recognize and expand the scope of their knowledge, continue self-directed learning, and identify and create professional opportunities for themselves and others.

Graduates in Biomedical Engineering will have an ability to:

• Apply knowledge of mathematics, science, and engineering.
• Design and conduct experiments, as well as to analyze and interpret data.
• Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
• Function on multidisciplinary teams.
• Identify, formulate, and solve engineering problems.
• Understand professional and ethical responsibility.
• Communicate effectively.
• Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
• Recognize the need for, and ability to, engage in life-long learning.
• Gain knowledge of contemporary issues.
• Use the techniques, skills, and modern engineering tools necessary for engineering practice.
• Apply principles of engineering, biology, human physiology, chemistry, calculus-based physics, mathematics (through differential equations), and statistics.
• Solve biomedical engineering problems, including those associated with the interaction between living and non-living systems.
• Analyze, model, design and realize biomedical engineering devices, systems, components, or processes.
• Make measurements on and interpret data from on living systems.

BME Bachelor of Science Programs
• Biomedical Engineering and Chemical and Biological Engineering
• Biomedical Engineering and Electrical Engineering, Electrical Engineering Concentration
• Biomedical Engineering and Electrical Engineering, Lasers and Optical Engineering Concentration
• Biomedical Engineering and Mechanical Engineering

Graduate
Graduate Program in Biomedical Engineering
Students interested in graduate work should refer to the Graduate and Professional Bulletin (http://catalog.colostate.edu/general-catalog/graduate-bulletin) or the (http://www.engr.colostate.edu/ce/degreeinfo.shtml)School of Biomedical Engineering.

Master Program
Master of Engineering, Plan C, Biomedical Engineering Specialization

Courses
Biomedical Engineering (BIOM)

BIOM 101 Introduction to Biomedical Engineering Credits: 3 (3-0-0)
Course Description: Basic principles, fundamentals in biomedical engineering including molecular, cellular and physiological principles, major areas such as biomechanics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 300  Problem-Based Learning Biomedical Engr Lab  Credits: 4 (1-4-1)
Course Description: Group problem-based learning approach to problems spanning all core areas of biomedical engineering.
Prerequisite: (BIOM 101) and (MATH 340 or MATH 345).
Registration Information: Must register for lecture, lab, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 306  Bioprocess Engineering  Credits: 3 (3-0-0)
Also Offered As: BTEC 306.
Course Description: Material, energy balances; fluid flow, heat exchange, mass transfer; application to operations in food, fermentation, other bioprocess industries.
Prerequisite: (CHEM 107 or CHEM 111) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 306 and BTEC 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 431  Biomedical Signal and Image Processing  Credits: 3 (3-0-0)
Also Offered As: ECE 431.
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.
Prerequisite: (ECE 303 with a minimum grade of C and ECE 311 with a minimum grade of C) and (PH 142 with a minimum grade of C).
Registration Information: Credit not allowed for both BIOM 431 and ECE 431.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 441  Biomechanics and Biomaterials  Credits: 3 (3-0-0)
Course Description: Principles of biomechanics, biofluids, and biomaterials.
Prerequisite: BMS 300, may be taken concurrently and CIVE 360 and MECH 324, may be taken concurrently and MECH 331, may be taken concurrently and MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 441A  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description: Principles of biomechanics, biofluids, and biomaterials.
Prerequisite: BIOM 441.
Registration Information: Enrollment in biomedical engineering major.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
BIOM 504  Fundamentals of Biochemical Engineering  Credits: 3 (3-0-0)
Also Offered As: CBE 504.

Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.

Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).

Registration Information: Credit not allowed for both BIOM 504 and CBE 504.

Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 522  Bioseparation Processes  Credits: 3 (2-2-0)
Also Offered As: CBE 522.

Course Description: Analysis of processes to recover and purify fermentation products.

Prerequisite: CBE 331.

Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 522 and CBE 522.

Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 525  Cell and Tissue Engineering  Credits: 3 (3-0-0)
Also Offered As: MECH 525.

Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.

Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.

Registration Information: Credit allowed for only one of the following: BIOM 525, CBE 525, MECH 525. Sections may be offered: Online.

Term Offered: Spring. (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 526  Biological Physics  Credits: 3 (3-0-0)
Also Offered As: ECE 526.

Course Description: Mathematical and physical modeling of biological systems. Mass transport in cellular environments. Electrical/mechanical properties of biomolecules.

Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).

Registration Information: Credit not allowed for both BIOM 526 and ECE 526. Sections may be offered: Online.

Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 531  Materials Engineering  Credits: 3 (3-0-0)
Also Offered As: MECH 531.

Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.

Prerequisite: MECH 331 or MECH 431.

Registration Information: Credit not allowed for both BIOM 531 and MECH 531. Sections may be offered: Online.

Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 532  Material Issues in Mechanical Design  Credits: 3 (3-0-0)
Also Offered As: MECH 532.

Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue and corrosion.

Prerequisite: MECH 331.

Registration Information: Credit not allowed for both BIOM 532 and MECH 532. Sections may be offered: Online.

Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 533  Biomolecular Tools for Engineers  Credits: 3 (2-3-0)
Also Offered As: CIVE 533

Course Description: Theoretical and practical aspects of biomolecular laboratory tools--PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.

Prerequisite: BMS 300 or MIP 300.

Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 533, CIVE 533 and ECE 533.

Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 537  Biomedical Signal Processing  Credits: 3 (3-0-0)
Also Offered As: ECE 537.

Course Description: Measuring, manipulating, and interpreting biomedical signals.

Prerequisite: MATH 340 or ECE 311 or STAT 303.

Registration Information: Credit not allowed for both BIOM 537 and ECE 537.

Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 543  Membranes for Biotechnology and Biomedicine  Credits: 3 (3-0-0)
Also Offered As: CBE 543.

Course Description: Polymeric membrane formation, modification, module design and applications to bioseparation and biomedical separations and tissue engineering.

Prerequisite: CHEM 343 and CBE 310.

Registration Information: Credit not allowed for both BIOM 543 and CBE 543. Sections may be offered: Online.

Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 570  Bioengineering  Credits: 3 (3-0-0)
Also Offered As: MECH 570.

Course Description: Physiological and medical systems analysis using engineering methods including mechanics, fluid dynamics, control electronics, and signal processing.

Prerequisite: MECH 307 and MECH 324.

Registration Information: Credit not allowed for both BIOM 570 and MECH 570. Sections may be offered: Online.

Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 573 Structure and Function of Biomaterials Credits: 3 (3-0-0)
Also Offered As: MECH 573.
Course Description: Structure-function relationships of natural biomaterials; application to analysis of biomimetic materials and biomaterials used in medical devices.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both BIOM 573 and MECH 573. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 574 Bio-Inspired Surfaces Credits: 3 (3-0-0)
Also Offered As: MECH 574.
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 576 Quantitative Systems Physiology Credits: 4 (4-0-0)
Also Offered As: MECH 576.
Course Description: Quantitative, model-oriented approach to cellular and systems physiology with design examples from biomedical engineering.
Prerequisite: BMS 300 and CHEM 113 and MATH 340 and PH 142.
Registration Information: Credit not allowed for both BIOM 576 and MECH 576. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 586A Biomedical Clinical Practicum Credits: 2 (1-3-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
BIOM 586B Biomedical Clinical Practicum Credits: 4 (1-6-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
BIOM 592 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Student and research faculty presentations, guest and invited extramural speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BIOM 671 Orthopedic Tissue Biomechanics Credits: 3 (3-0-0)
Course Description: Linear elastic, finite deformation, and viscoelastic theories applied to the mechanical behavior of orthopedic tissues (bone, tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BIOM 671 and MECH 671 or for BIOM 671/MECH 671 and BIOM 571/MECH 571.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course; may not be used to satisfy degree requirements requiring bioengineering courses.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BIOM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BIOM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BIOM 750 Grant Proposal Writing and Reviewing Credit: 1 (1-0-0)
Course Description: Preparation and review of applications for fellowships and grants.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 784 Supervised College Teaching Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BIOM 786 Practicum-Laboratory Rotations Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
**BIOM 795** Independent Study Credits: Var[1-6] (0-0-0)

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**BIOM 798** Research-Laboratory Rotations Credits: Var[1-6] (0-0-0)

**Course Description:** Doctoral laboratory rotation.

**Prerequisite:** None.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**BIOM 799** Dissertation Credits: Var[1-18] (0-0-0)

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

---

## Dual Degree Program: Biomedical Engineering and Chemical and Biological Engineering

### Requirements

**Effective Fall 2016**

**Freshman**

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**Additional Requirements for Graduation**

**Total Credits**

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**Sophomore**

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**Additional Requirements for Graduation**

**Total Credits**

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**Junior**

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<td>Process Simulation</td>
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CBE 331  Momentum Transfer and Mechanical Separations  3
CBE 332  Heat and Mass Transfer Fundamentals  3
CBE 493  Professional Development Seminar  1
LIFE 210  Introductory Eukaryotic Cell Biology  3
Advanced Writing  2  3
Additional Requirements for Graduation\(^1\)  0

Total Credits  34

**Senior**

BIOM 421  Transport Phenomena in Biomedical Engineering  3
BIOM 422  Kinetics of Biomolecular and Cellular Systems  3
CBE 333  Chemical and Biological Engineering Lab I  2
CBE 442  Separation Processes  4
CBE 443  Chemical and Biological Engineering Lab II  2
CBE 451  Chemical and Biological Engineering Design I  3
MECH 262  Engineering Mechanics  4
STAT 315  Statistics for Engineers and Scientists  3
Arts and Humanities  3B  3
Historical Perspectives  3D  3
Additional Requirements for Graduation\(^1\)  0

Total Credits  30

**Fifth Year**

BIOM 486A  Biomedical Design Practicum: Capstone Design I  4A,4B,4C  4
BIOM 486B  Biomedical Design Practicum: Capstone Design II  4A,4B,4C  4
CBE 430  Process Control and Instrumentation  3
Arts and Humanities  3B  3
Global and Cultural Awareness  3E  3
Social and Behavioral Sciences  3C  3
BME Technical Elective\(^2\)  3
CBE Technical Elective\(^3\)  5
Additional Requirements for Graduation\(^1\)  0

Total Credits  28

Program Total Credits:  158

**Approved BME Technical Electives for BME-CBE BS Program**

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Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

Select a total of 3 credits from Approved BME Technical Electives for BME-CBE Program

Select 5 credits from Approved CBE Technical Electives for BME-CBE Program

Major Completion Map

Distinctive Requirements for Degree Program:

TO DECLARE MAJOR: Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with chemical and biological engineering program must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

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<td>Modern Organic Chemistry Laboratory</td>
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<td>Introduction to Ordinary Differential Equations</td>
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<td>Physics for Scientists and Engineers II (GT-SC1)</td>
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### PLI Requirement

| Total Credits | 17 |

### Junior

#### Semester 5

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<td>Principles of Human Physiology</td>
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<td>Molecular Concepts and Applications</td>
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<td>Process Simulation</td>
<td>X</td>
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<tr>
<td>CBE 331</td>
<td>Momentum Transfer and Mechanical Separations</td>
<td>X</td>
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<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
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### PLI Requirement

| Total Credits | 16 |

### Semester 6

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<tr>
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<td>Principles of Biochemistry</td>
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<td>BIOM 300</td>
<td>Problem-Based Learning Biomedical Engr Lab</td>
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<td>Chemical and Biological Reactor Design</td>
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<td>CBE 332</td>
<td>Heat and Mass Transfer Fundamentals</td>
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### PLI Requirement

| Total Credits | 18 |

### Senior

#### Semester 7

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<tr>
<td>BIOM 421</td>
<td>Transport Phenomena in Biomedical Engineering</td>
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<td>CBE 333</td>
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<td>CBE 442</td>
<td>Separation Processes</td>
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<td>CBE 451</td>
<td>Chemical and Biological Engineering Design I</td>
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<td>Arts and Humanities</td>
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### PLI Requirement

| Total Credits | 15 |

### Semester 8

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<tbody>
<tr>
<td>BIOM 422</td>
<td>Kinetics of Biomolecular and Cellular Systems</td>
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<tr>
<td>CBE 443</td>
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<td>STAT 315</td>
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<td>Historical Perspectives</td>
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### PLI Requirement

| Total Credits | 15 |

### Semester 9

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<tr>
<td>BIOM 486A</td>
<td>Biomedical Design Practicum: Capstone Design I</td>
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<td>4A,4B,4C</td>
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<td>CBE Technical Electives (See List on Requirements Tab)</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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### PLI Requirement

| Total Credits | 15 |
Semester 10

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<tr>
<td>BIOM 486B</td>
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<td>Process Control and Instrumentation</td>
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<td>BME Technical Elective (See List on Requirements Tab)</td>
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The benchmark courses for the 10th semester are the remaining courses in the entire program of study.

Total Credits: 13

Program Total Credits: 158

---

Dual Degree Program: Biomedical Engineering and Electrical Engineering, Electrical Engineering Concentration Requirements

Effective Fall 2016

Freshman

<table>
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<td>Introduction to Biomedical Engineering</td>
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<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<td>CHEM 112</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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Select one group from the following:

Group A:
- CS 155: Introduction to Unix
- CS 156: Introduction to C Programming I
- CS 157: Introduction to C Programming II

Group B:
- CS 163 or 164: Java (CS1) No Prior Programming
  - Java (CS1) Prior Programming

ECE 102: Digital Circuit Logic
ECE 103: DC Circuit Analysis
MATH 160: Calculus for Physical Scientists I (GT-MA1) 1B
MATH 161: Calculus for Physical Scientists II (GT-MA1) 1B
PH 141: Physics for Scientists and Engineers I (GT-SC1) 3A

Additional Requirements for Graduation:

Total Credits: 34-35

Sophomore

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<tr>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
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<tr>
<td>ECE 202</td>
<td>Circuit Theory Applications</td>
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<tr>
<td>ECE 251</td>
<td>Introduction to Microprocessors</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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Select one course from the following:

MATH 340: Introduction to Ordinary Differential Equations
MATH 345: Differential Equations
MECH 337: Thermodynamics

Total Credits: 34-35
Dual Degree Program: Biomedical Engineering and Electrical Engineering, Electrical Engineering Concentration

PH 142 Physics for Scientists and Engineers II (GT-SC1) 3A 5
Additional Requirements for Graduation 1

Total Credits 32

Junior

BMS 300 Principles of Human Physiology 4
CHEM 245 Fundamentals of Organic Chemistry 4
ECE 303/STAT 303 Introduction to Communications Principles 3
ECE 311 Linear System Analysis I 3
ECE 312 Linear System Analysis II 3
ECE 341 Electromagnetic Fields and Devices I 3
ECE 342 Electromagnetic Fields and Devices II 3
LIFE 210 Introductory Eukaryotic Cell Biology 3
MECH 262 Engineering Mechanics 4
Global and Cultural Awareness 3E 3
Additional Requirements for Graduation 1

Total Credits 33

Senior

BIOM 300 Problem-Based Learning Biomedical Engr Lab 4
ECE 331 Electronics Principles I 4
ECE 332 Electronics Principles II 4
ECON 202 Principles of Microeconomics (GT-SS1) 3C 3
Arts and Humanities 3B 3
ECE Technical Electives 2 9
Additional Requirements for Graduation 1

Total Credits 27

Fifth Year

BIOM 486A Biomedical Design Practicum: Capstone Design I 4A,4B,4C 4
BIOM 486B Biomedical Design Practicum: Capstone Design II 4A,4B,4C 4
Select one from the following: 3
CO 301B Writing in the Disciplines: Sciences (GT-CO3) 2
JTC 300 Professional and Technical Communication (GT-CO3) 2
Arts and Humanities 3B 3
Historical Perspectives 3D 3
BME Technical Electives (See list below) 6
ECE Technical Electives 3 8
Additional Requirements for Graduation 1

Total Credits 31

Program Total Credits: 157-158

BME Technical Electives:

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<td>BC 403</td>
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<td>BC 404</td>
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<td>BC 411</td>
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<td>BC 463</td>
<td>Molecular Genetics</td>
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<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
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<td>BC 565</td>
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<td>Transport Phenomena in Biomedical Engineering</td>
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<td>Kinetics of Biomolecular and Cellular Systems</td>
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<td>BIOM 441</td>
<td>Biomechanics and Biomaterials</td>
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<td>BIOM 470/MECH 470</td>
<td>Biomedical Engineering</td>
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<td>BIOM 476A</td>
<td>Biomedical Clinical Practicum I</td>
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<td>BIOM 476B</td>
<td>Biomedical Clinical Practicum II</td>
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<td>BIOM 504/CBE 504</td>
<td>Fundamentals of Biochemical Engineering</td>
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<td>BIOM 525/MECH 525</td>
<td>Cell and Tissue Engineering</td>
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<td>Biological Physics</td>
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<td>BIOM 531/MECH 531</td>
<td>Materials Engineering</td>
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<td>BIOM 533/CIVE 533</td>
<td>Biomolecular Tools for Engineers</td>
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<td>Membranes for Biotechnology and Biomedicine</td>
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<td>BIOM 570/MECH 570</td>
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<td>Structure and Function of Biomaterials</td>
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<td>Nerve and Muscle-Toxins, Trauma and Disease</td>
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<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<td>BZ 476/BZ 576</td>
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<td>Principles of NMR and MRI: Basic NMR Principles</td>
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<td>CHEM 539B</td>
<td>Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI</td>
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<td>Principles of NMR and MRI: Advanced NMR and MRI Techniques</td>
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<td>General Microbiology Laboratory</td>
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</table>
Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

Select a total of 17 credits from ECE 400-level or higher courses not otherwise required. 3 of the 17 credits must be from ECE courses dual-listed with the BIOM subject code.

### Major Completion Map

#### Distinctive Requirements for Degree Program:

**TO DECLARE MAJOR:** Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with electrical engineering program must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

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<td>&amp; CS 156</td>
<td>Introduction to Unix</td>
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<td>OR</td>
<td>CS 163 or 164</td>
<td>Java (CS1) No Prior Programming</td>
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**Senior**

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**Total Credits**: 15

**Program Total Credits**: 157-158
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¹ Note: Additional requirements may vary depending on specific graduation requirements.
Historical Perspectives 3D 3
BIOM or ECE Electives 2 9
Additional Requirements for Graduation 1 0
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Total Credits 29
Program Total Credits: 158-159

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1 Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

2 Select 9 credits from courses with the BIOM or ECE subject code.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**TO DECLARE MAJOR:** Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. Please see competitive major requirements or the advisor in the Department for more information.

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with electrical engineering program (with concentration in lasers and optics)
must achieve a minimum 2.000 grade point average at Colorado State in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

**Freshman**

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**Sophomore**

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**Junior**

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| Program Total Credits: | | | | 158-159 |
# Dual Degree Program: Biomedical Engineering and Mechanical Engineering

## Requirements

### Effective Spring 2017

#### Freshman

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Additional Requirements for Graduation

**Total Credits**: 30

#### Sophomore

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<td>Engineering Mechanics-Dynamics</td>
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Additional Requirements for Graduation

**Total Credits**: 34

#### Junior

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Global and Cultural Awareness

Social and Behavioral Sciences

Additional Requirements for Graduation

**Total Credits**: 34
### Senior

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**Arts and Humanities**

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**BME Technical Elective (See list below)**

**MECH Technical Elective**

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**Historical Perspectives**

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<td>Membranes for Biotechnology and Biomedicine</td>
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Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.

Select 3 credits from any of the following: MECH 303 or any 400-level MECH course except MECH 486A, MECH 486B MECH 408, MECH 410, MECH 495, MECH 498A, or MECH 498B.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**TO DECLARE MAJOR:** Engineering is a controlled major: students are admitted into the major only if they meet established academic standards. The biomedical engineering combined with mechanical engineering program has additional admissions requirements and enrollment limits. Please see competitive major requirements or the advisor in the Department for more information.

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for this major assumes students enter college prepared to take calculus and chemistry. To qualify for graduation, students in the biomedical engineering combined with mechanical engineering must achieve a minimum 2.000 grade point average at CSU in all courses in engineering, mathematics, computer science, statistics, physics, and chemistry as well as courses taken as technical electives. Students are required to participate in the Professional Learning Institute (PLI) program as a requirement for graduation. The program consists of eleven PLI workshops distributed by focus areas as follows: Global and Cultural Diversity (2 workshops), Innovation (2 workshops), Leadership (2 workshops), Civic and Public Engagement (2 workshops), and Ethics (3 workshops). Each workshop is between 1-2 hours long and no outside preparation is required to attend any of the workshops. Attendance at the required workshops may be spread over the student’s five-year program.
### Junior

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Arts and Humanities  X  3B  3
Historical Perspectives  X  3E  3
The benchmark courses for the 10th semester are the remaining courses in
the entire program of study.

| Total Credits | 13 |
| Program Total Credits: | 157 |

**Colleges of Health and Human Sciences**

Office in L.L. Gibbons Building, Room 217
(970) 491-6331
clhs.colostate.edu (http://www.chhs.colostate.edu)

Professor Jeff McCubbin, Dean
Professor Dale DeVoe, Associate Dean for Academic Programs
Professor Patricia L. Davies, Associate Dean for Research and Graduate Programs
Professor Lise Youngblade, Associate Dean for Strategic Initiatives

**Undergraduate Majors**
- Apparel and Merchandising
- Construction Management
- Early Childhood Education
- Family and Consumer Sciences
- Fermentation Science and Technology
- Health and Exercise Science
- Hospitality Management
- Human Development and Family Studies
- Interior Design
- Nutrition and Food Science
- Social Work

**Undergraduate Minors**
- Construction Management
- Merchandising
- Nutrition

**Interdisciplinary Minors**
- Food Science/Safety Interdisciplinary Minor
- Gerontology Interdisciplinary Minor

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

**Graduate Programs**
For detailed information about graduate programs, contact individual departments. See also the Graduate and Professional Bulletin.

**College Programs**
The College of Health and Human Sciences (http://www.chhs.colostate.edu) comprises six academic departments and two schools. It is a human-centered place, with a focus on educating students for people-oriented professions and on applying creative, interdisciplinary research to solve social problems. Each of its units offers professional education for careers and for lifelong learning, through a solid grounding in the natural sciences, social sciences, and humanities as well as courses specific to each field of study. The College currently includes the Departments of Construction Management; Design and Merchandising; Food Science and Human Nutrition; Health and Exercise Science; Human Development and Family Studies; and Occupational Therapy; and the Schools of Education and Social Work.

Learning within the College takes place in a variety of settings on and off campus, forging strong links between the classroom and the workplace. All of the College’s programs combine classroom instruction with hands-on experience in state-of-the-art computer laboratories, research laboratories, or specialized centers and institutes that emphasize the practical application of new knowledge.

Faculty in the College of Health and Human Sciences maintain valued and useful relationships with a broad range of constituents, enhancing College visibility within the larger community, fulfilling CSU’s land-grant mission. These vital connections also provide students with excellent opportunities for working internships in their fields. For all its students, the College places a strong emphasis on experiential learning and leadership opportunities that allow students to test new skills in real-world settings. Numerous scholarships (http://www.chhs.colostate.edu/students/scholarships.aspx) are available through the College of Health and Human Sciences each spring semester.
Department of Construction Management

The Construction Management (CM) program at CSU is one of the top-ranked programs in the nation. Since its inception in 1946, more than 5,000 students have graduated, many of them going on to become leaders in their field. The program is accredited by the American Council for Construction Education.

Construction management is the overall planning, coordination, and control of a project from inception to completion. The CM major addresses issues related to the management of multiple project sites and the applications of resource management, schedule control, cost control, design, and other requirements of the construction process. Design elements concentrate on the relationship between the built environment and the comfort of its inhabitants while safety education emphasizes the health of the individual worker.

Undergraduate Program

A major in Construction Management provides a strong foundation for professional careers in the construction industry. The curriculum integrates technology and innovative management systems with the basics of civil engineering, business and management, and the communication skills required to be successful in today's world.

Coursework includes construction methods, estimating, scheduling, computer technologies, architectural principles, fundamentals of management and law, steel and concrete structures, and soils. The curriculum incorporates hands-on labs for most courses. This diverse program creates a broad range of career options for graduates.

Graduate Program

The Department of Construction Management offers graduate study leading to the Master of Science degree. The focus of the department is on professional programs that successfully combine theory and application with a strong emphasis in applied management. The master's program is an advanced curriculum designed to allow students to tailor a portion of the specialization requirements to meet individual interests and goals.

Each program can be individually tailored to meet the needs and interests of the student.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Construction Management (http://cm.chhs.colostate.edu).

Master Programs

• Master of Science in Construction Management, Plan A
• Master of Science in Construction Management, Plan B

Courses

Construction Management (CON)

CON 101 Introduction to Construction Management Credits: 3 (3-0-0)
Course Description: Identify and understand relationships among participants in the construction process and its history.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 131 Graphic Communications for Construction Credits: 2 (0-4-0)
Course Description: Reading technical drawings, 2D/3D visualization, manual drafting techniques, introduction to design software applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 151 Construction Materials and Methods Credits: 3 (3-0-0)
Course Description: Materials and methods utilized in the design and construction of buildings.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON 251</td>
<td>Materials Testing and Processing</td>
<td>2</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>Testing of construction materials for standards and quality. Conduct common quality tests and document the results. Prerequisite: CON 151. Registration Information: Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>CON 252</td>
<td>Construction Surveying</td>
<td>3</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>Surveying fundamentals to field of construction, building layout, measurement procedures, vertical controls, line and grade, surveying instrument operation. Prerequisite: (CON 131 or INTD 166) and (MATH 125 or MATH 160). Registration Information: Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>CON 265</td>
<td>Construction Estimating I</td>
<td>3</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>Integration of construction materials and methods into construction systems that will be incorporated in projects. Prerequisite: CON 131 and CON 151. Registration Information: Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>CON 352</td>
<td>Metal Fabrication for Construction</td>
<td>2</td>
<td>Fall, Spring</td>
<td>Yes.</td>
<td>No.</td>
<td>Shaping, cutting, and joining of structural and non-structural metal. Emphasis on jobsite safety, economics, and efficiency. Prerequisite: CON 251. Registration Information: Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>CON 359</td>
<td>Structures I</td>
<td>4</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
<td>Behavior of structural components and systems, overview of structural engineering analysis/design process. Prerequisite: MATH 125. Registration Information: Junior or senior standing.</td>
</tr>
<tr>
<td>CON 360</td>
<td>Electrical and Control Systems</td>
<td>3</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>Electrical and control systems and their application in the construction industry. Prerequisite: CON 265. Registration Information: Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>CON 366</td>
<td>Construction Estimating II</td>
<td>3</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>Industry-recognized methods for work item analysis, quantity surveying, resource estimating, and bid development using work breakdown structures. Prerequisite: CON 265. Registration Information: Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>CON 270</td>
<td>Introduction to Road Construction</td>
<td>3</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>Steps necessary to construct a paved roadway from conception, land acquisition and finance through paving operations and trafficking. Prerequisite: None. Term Offered: Fall. Grade Mode: Traditional. Special Course Fee: No.</td>
</tr>
<tr>
<td>CON 351</td>
<td>Construction Field Management</td>
<td>2</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>Materials and methods used in construction, administrative and organizational planning used to complete a project. Prerequisite: CON 251, may be taken concurrently and CON 317, may be taken concurrently. Registration Information: Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>CON 267</td>
<td>Construction Management Pre-Internship</td>
<td>1</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
<td>Skills and concepts related to successful internships within the construction management industry. Prerequisite: None. Registration Information: Construction management majors only.</td>
</tr>
<tr>
<td>CON 367</td>
<td>Construction Contracts/Project Administration</td>
<td>3</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>Utilization of field engineering systems and procedures to effectively meet project objectives. Prerequisite: CON 265 and CON 351, may be taken concurrently. Registration Information: Construction management majors and minors only. Terms Offered: Fall, Spring. Grade Mode: Traditional. Special Course Fee: No.</td>
</tr>
</tbody>
</table>
CON 461  Construction Scheduling and Cost Control Credits: 3 (2-2-0)
Course Description: Strategies and techniques for efficient scheduling of project activities and control of project costs; emphasis on Critical Path Method.
Prerequisite: CON 365.
Registration Information: Construction management majors and minors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 359  Structures II Credits: 4 (4-0-0)
Course Description: Design of formwork, falsework, and shoring.
Prerequisite: CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 462  Financial Management for Construction Credits: 3 (3-0-0)
Course Description: Financial statements, financial ratios, applications of engineering economy, cash flow analysis, construction financing, and cost information systems.
Prerequisite: ACT 205 or ACT 210, may be taken concurrently (and MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 476  Sustainable Practice-Design and Construction Credits: 3 (3-0-0)
Course Description: Major components of sustainable design/construction: energy, healthy buildings, cultural, natural resources, use, other environment/economic issues.
Prerequisite: None.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 370  Asphalt Pavement Materials and Construction Credits: 3 (2-2-0)
Course Description: Constituents of asphalt pavements; manufacture of asphalt cement, emulsions, and cutbacks; material properties and behavior.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 459  Structures II Credits: 4 (4-0-0)
Course Description: Design of formwork, falsework, and shoring.
Prerequisite: CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 469  Soils Engineering for Construction Managers Credits: 3 (2-0-1)
Course Description: Soil mechanics, foundation engineering, and foundation construction.
Prerequisite: CON 359.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 471  Project Management for Mechanical Systems Credits: 3 (3-0-0)
Course Description: Fundamental principles of mechanical systems. Presentation and practice of management principles relevant to mechanical projects.
Prerequisite: CON 371 and CON 365, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 365  Construction Management Professional Practice Credits: 3 (1-0-2)
Course Description: Leading projects and people in a construction business and application of skills in a construction-based community service learning project.
Prerequisite: CON 365 and CON 367, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 371  Mechanical and Plumbing Systems Credits: 3 (3-0-0)
Course Description: Heating, ventilation, air conditioning, plumbing, and fire suppression with emphasis on design, operation, and interaction.
Prerequisite: CON 360, may be taken concurrently or INTD 276, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 465  Construction Leadership Credits: 3 (1-0-2)
Course Description: Professional practice using an understanding of the contractual and working relationships among all participants in the design/construction process.
Prerequisite: (CON 461, may be taken concurrently) and (CON 487A or CON 487B).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 477  Sustainable Practice-Design and Construction Credits: 3 (3-0-0)
Course Description: Major components of sustainable design/construction: energy, healthy buildings, cultural, natural resources, use, other environment/economic issues.
Prerequisite: None.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 384  Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Credit not allowed for both CON 450 and INTD 450.
Terms Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 450  Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: INTD 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both CON 450 and INTD 450.
Terms Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 459  Structures II Credits: 4 (4-0-0)
Course Description: Design of formwork, falsework, and shoring.
Prerequisite: CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 464  Construction Leadership Credits: 3 (1-0-2)
Course Description: Leading projects and people in a construction business and application of skills in a construction-based community service learning project.
Prerequisite: CON 365 and CON 367, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 384  Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Credit not allowed for both CON 450 and INTD 450.
Terms Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 450  Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: INTD 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both CON 450 and INTD 450.
Terms Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 459  Structures II Credits: 4 (4-0-0)
Course Description: Design of formwork, falsework, and shoring.
Prerequisite: CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CON 477  Residential Aging-in-Place and Green Building  Credits: 3 (3-0-0)
Course Description: Aging-in-place and green building aspects of the residential construction market.
Prerequisite: CON 265.
Restriction:  .
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 487A  Internship: Construction Management I  Credits: 6 (0-0-18)
Course Description:
Prerequisite: CON 267 and CON 367.
Registration Information: OSHA 10-hour construction safety card.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 487B  Internship: Construction Management II  Credits: 3 (0-0-9)
Course Description:
Prerequisite: CON 267 and CON 367.
Registration Information: OSHA 10-hour construction safety card; 500 hours documented work experience.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 495  Independent Study-Construction Management  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 496  Group Study-Construction Management  Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 9 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 502  Research in Construction Management I  Credits: 3 (2-0-1)
Course Description: Research, discuss, and present current issues and trends in the construction industry related to business, management, engineering, and technology.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 502 and CON 562.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 503  Research in Construction Management II  Credits: 3 (3-0-0)
Course Description: Models and methods of disciplined inquiry used in diverse application-based organizations. Preparation to use disciplined inquiry methods to solve applied problems in construction management or related fields. Topics include problem/topic selection, writing research questions and objectives, literature reviews, selection of research methods, data collection and analysis, and conclusions and implications.
Prerequisite: CON 502.
Registration Information: Credit not allowed for both CON 503 and CON 500.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 511  Project Procurement and Preconstruction  Credits: 3 (2-0-1)
Course Description: Advanced project procurement procedures with a focus on early design phase planning applications and preconstruction management techniques.
Prerequisite: CON 461.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 511 and CON 566.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 512  Post-Award Construction Management  Credits: 3 (2-0-1)
Course Description: Advanced topics related to post-award construction management issues with a focus on multiple project controls and project risk management.
Prerequisite: CON 461.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 512 and CON 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 521  Sustainable Building & Infrastructure Systems  Credits: 3 (2-0-1)
Course Description: Issues and state-of-the-art resources needed to construct, remodel/retrofit, operate and maintain the built environment (buildings and infrastructure). Specifically, resources will include major materials, components and technologies, as well as energy and water resources are needed in the different life-cycle phases of the building or infrastructure project.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both CON 521 and CON 576.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 561  Applied Productivity Improvement  Credits: 3 (3-0-0)
Course Description: Existing and emerging tools for productivity enhancement in project and production environment.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CON 565  Legal Aspects of Construction Process  Credits: 3 (3-0-0)
Course Description: Common points of dispute; methods of avoiding disputes among owner, architect, engineer, and contractor.
Prerequisite: None.
Registration Information: Admission to the construction management master’s program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 566  Regulation Impact on Construction  Credits: 3 (3-0-0)
Course Description: Role government plays in the design and construction of the built environment.
Prerequisite: None.
Registration Information: Admission to the construction management master’s program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 567  Preservation and Rehabilitation of Buildings  Credits: 3 (3-0-0)
Course Description: Theory and applications of preservation technology used in the management and rehabilitation of historic and archaic buildings.
Prerequisite: None.
Registration Information: Admission to the construction management master’s program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 568  Construction Industry Institute Practices  Credits: 3 (3-0-0)
Course Description: Senior executives from the Construction Industry Institute (CII) present best practices developed by CII over the last 25 years.
Prerequisite: CON 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 569  Regulatory Impact on Construction  Credits: 3 (3-0-0)
Course Description: Role government plays in the design and construction of the built environment.
Prerequisite: None.
Registration Information: Admission to the construction management master’s program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 570  Facility Planning and Management  Credits: 3 (3-0-0)
Course Description: Planning, organizing and managing large educational and/or commercial facilities.
Prerequisite: None.
Registration Information: Admission to the construction management master’s program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 571  Managerial Decision Making for Constructors  Credits: 3 (3-0-0)
Course Description: Construction and real estate development applications of multi-disciplinary managerial analysis and decision-making techniques.
Prerequisite: None.
Registration Information: Admission to the construction management master’s program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 572  Leadership of Sustainable Community Projects  Credits: 3 (2-0-1)
Course Description: Learn and apply principles of sustainable construction management through leading and building service-learning projects.
Prerequisite: CON 476 or CON 450 or INTD 450.
Registration Information: Required background check.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 573  Workshop  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 574  Seminar  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 575  Internship  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 576  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 577  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 578  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Once a student has met the minimum requirements listed above they are admitted to CSU or seeking to change their major to CM must first be designated as pre-construction management. To be considered for the Construction Management major is controlled, and all students for Construction Education.

Construction management is the overall planning, coordination, and control of a project from inception to completion. The CM major addresses issues related to the management of multiple project sites and the applications of resource management, schedule control, cost control, design, and other requirements of the construction process. Design elements concentrate on the relationship between the built environment and the comfort of its inhabitants while safety education emphasizes the health of the individual worker.

A major in Construction Management provides a strong foundation for professional careers in the construction industry. The curriculum integrates technology and innovative management systems with the basics of civil engineering, business and management, and the communication skills required to be successful in today’s world. Coursework includes construction methods, estimating, scheduling, computer technologies, architectural principles, fundamentals of management and law, steel and concrete structures, and soils. The curriculum incorporates hands-on labs for most courses. This diverse program creates a broad range of career options for graduates.

The Construction Management major is controlled, and all students admitted to CSU or seeking to change their major to CM must first be designated as pre-construction management. To be considered for admission to CM students must:

- Complete a minimum of 15 credits at CSU
- Earn a minimum 2.750 cumulative CSU GPA
- Complete CON 101 with a “B” grade or better
- Complete CO 150 with a “B” grade or better
- Complete MATH 125 with a “C” grade or better

Once a student has met the minimum requirements listed above they are eligible to apply to the CM program.

During their academic career, CM students are required to obtain an internship (full-time structured work experience) position with any one of a variety of construction companies and organizations. Our Phelps Placement Office assists current and graduating students as well as alumni with in-house interviews, bi-annual career fairs, and the publication of a graduate resume book.

Students will develop and demonstrate:

- Professional, analytical, and problem solving skills related to the career requirements in construction management
- Strong professional communication skills with an emphasis on written, graphic, and verbal skills related to the career requirements in construction management
- Technical proficiency in the following construction management areas: design/engineering, management, materials and methods, estimating, scheduling, safety, surveying, and project administration

The construction industry has become a highly technical industry marked by continuous and dramatic change. There is a continued demand for capable and highly trained construction management professionals who can adapt and become effective leaders in the field. CM continues to boast one of the highest placement rates and entry level salaries of all majors.

In addition to the campus Career Center, the CM Department prides itself on its in-house career support. Services provided by the Phelps Placement Office include internship and career placement, bi-annual CM career fair, in-house industry interviews, graduate resume publication, year-round intern and job postings, resume and business correspondence career fair, in-house industry interviews, graduate resume publication, year-round intern and job postings, resume and business correspondence resources, and career assessment counseling.

Entry-level occupations include, but are not limited to: field engineer, assistant estimator, project scheduler, cost control engineer, safety engineer, project supervisor, project coordinator, quality assurance specialist, project engineer, assistant project manager, and assistant superintendent. Recruiting Industries include: Commercial, Heavy Civil and Heavy Highway, Industrial and Utility, Mechanical and Electrical, Project Controls and Consulting, Residential Development, Specialty Contracting, and Transportation.

Students may consider simultaneously completing the requirements for a minor in Business Administration. Several of the courses required for the minor in Business Administration are also required for the major in Construction Management curriculum.

**Requirements**

### Effective Spring 2015

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>CON 101</td>
<td>Introduction to Construction Management</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CON 131</td>
<td>Graphic Communications for Construction</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>CON 151</td>
<td>Construction Materials and Methods</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
Select one course from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>GEOL 122</td>
<td>The Blue Planet: Geology of Our Environment (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>GEOL 124</td>
<td>Geology of Natural Resources (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>GEOL 121</td>
<td>Introductory Geology Laboratory (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
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<tr>
<td>Total Credits</td>
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<td>31</td>
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</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 205</td>
<td>Fundamentals of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 205</td>
<td>Legal and Ethical Issues in Business</td>
<td>3</td>
</tr>
<tr>
<td>CON 251</td>
<td>Materials Testing and Processing</td>
<td>2</td>
</tr>
<tr>
<td>CON 261</td>
<td>Construction Surveying</td>
<td>3</td>
</tr>
<tr>
<td>CON 265</td>
<td>Construction Estimating I</td>
<td>3</td>
</tr>
<tr>
<td>CON 317</td>
<td>Safety Management</td>
<td>2</td>
</tr>
<tr>
<td>CON 351</td>
<td>Construction Field Management</td>
<td>2</td>
</tr>
<tr>
<td>CON *** Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SPCM 200</td>
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**Junior**

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<td>Electrical and Control Systems</td>
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<td>Construction Estimating II</td>
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<td>CON 366</td>
<td>Construction Equipment and Methods</td>
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<td>CON 367</td>
<td>Construction Contracts/Project Administration</td>
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<td>Mechanical and Plumbing Systems</td>
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<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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**Senior**

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<td>CON 461</td>
<td>Construction Scheduling and Cost Control</td>
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<td>CON 462</td>
<td>Financial Management for Construction</td>
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<td>CON 465</td>
<td>Construction Management Professional Practice</td>
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<td>Group B:</td>
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<td>AREC 240/ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
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<td>AREC 346/ECON 346</td>
<td>Economics of Outdoor Recreation</td>
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<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<tr>
<td>CS 110</td>
<td>Personal Computing</td>
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<td>CS 150</td>
<td>Interactive Programming with Java</td>
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<td>Principles of Macroeconomics (GT-SS1)</td>
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<td>ECON 304</td>
<td>Intermediate Macroeconomics</td>
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<td>ECON 306</td>
<td>Intermediate Microeconomics</td>
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<td>ECON 315</td>
<td>Money and Banking</td>
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<td>ECON 320</td>
<td>Economics of Public Finance</td>
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<td>Fundamentals of Finance</td>
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<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
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<td>REL 360</td>
<td>Real Estate Principles</td>
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<td><strong>Foreign Language (prerequisites may apply)</strong></td>
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<td>L*** 10* First-Year Language I or II</td>
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<td>LJPN 208</td>
<td>Kanji Study</td>
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<td>INTD 200</td>
<td>Housing Values in America</td>
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<td>Interior Design Anatomy</td>
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<td>Three-Dimensional Thinking</td>
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<td>Visual Communication-Multi-Media</td>
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<td>Lighting Design</td>
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<td>Interior Materials and Finishes</td>
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<td>INTD 350</td>
<td>Codes-Health and Safety</td>
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<td><strong>Mathematics/Statistics (prerequisites and major restrictions may apply)</strong></td>
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<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<td>STAT 321</td>
<td>Elementary Probabilistic-Stochastic Modeling</td>
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<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
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<td><strong>Science (prerequisites and major restrictions may apply)</strong></td>
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<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
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CHEM 104  Chemistry in Context Laboratory (GT-SC1) 1
CHEM 107  Fundamentals of Chemistry (GT-SC2) 4
CHEM 108  Fundamentals of Chemistry Laboratory (GT-SC1) 1
CHEM 111  General Chemistry I (GT-SC2) 4
CHEM 112  General Chemistry Lab I (GT-SC1) 1
CHEM 113  General Chemistry II 3
CHEM 114  General Chemistry Lab II 1
HES 240  First Aid and Emergency Care 2
PH 142  Physics for Scientists and Engineers II (GT-SC1) 5

**Civil Engineering (prerequisites and major restrictions may apply)**

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<td>Infrastructure and Transportation Systems</td>
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<td>CIVE 322</td>
<td>Basic Hydrology</td>
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<td>CIVE 330</td>
<td>Ecological Engineering</td>
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<td>CIVE 355</td>
<td>Introduction to Geotechnical Engineering</td>
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<td>CIVE 356</td>
<td>Geotechnical Engineering Laboratory</td>
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<td>CIVE 360</td>
<td>Mechanics of Solids</td>
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<td>CIVE 363</td>
<td>Material Properties</td>
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<td>CIVE 367</td>
<td>Structural Analysis</td>
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<td>CIVE 390</td>
<td>Civil Engineering Student Projects Workshop</td>
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<td>CIVE 401</td>
<td>Hydraulic Engineering</td>
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<td>CIVE 423</td>
<td>Groundwater Engineering</td>
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<td>CIVE 425</td>
<td>Soil and Water Engineering</td>
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<td>CIVE 437</td>
<td>Wastewater Treatment Facility Design</td>
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<td>CIVE 438</td>
<td>Environmental Engineering Concepts</td>
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<td>Applications in Geotechnical Engineering</td>
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<td>CIVE 467</td>
<td>Design of Reinforced Concrete Structures</td>
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<td>CIVE 575</td>
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**Communication (prerequisites and major restrictions may apply)**

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<td>Corporate and Professional Communication (GT-C03)</td>
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<td>Media Ethics and Issues</td>
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**Internship**

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<tr>
<td>CON 487A</td>
<td>Internship: Construction Management I 2</td>
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1 Select any L*** 105 or L*** 107 first-year language course(s) except LLAT 105 and LLAT 107, or any L*** 205 or L*** 207 second-year language course.

2 This is a 24-week internship. Additional credits accepted to fulfill Technical Elective requirement.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

Every student pursuing the Construction Management (CM) major will start as Pre#Construction Management and must meet the following admission requirements before being fully admitted to the Construction Management major:

- Earn a minimum 2.750 cumulative CSU GPA
- Complete CON 101, Introduction to Construction Management, with a "B" grade or better
- Complete CO 150, College Composition, with a "B" grade or better
- Complete MATH 125, Numerical Trigonometry, with a "C" grade or better

Besides CON 101, Pre#Construction Management students are not able to take CON courses until fully admitted to Construction Management. There is a required internship course that takes place the summer prior to the student's graduation. Students must complete CON 487A (24 week Internship) or CON 487B (12 week Internship) plus 500 hours work experience to be submitted by December prior to internship.
MATH 117 and MATH 118 are prerequisite courses required for this major in order to complete MATH 125.

**Freshman**

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<td>Arts and Humanities</td>
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**Semester 2**

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<td>CON 151</td>
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<td>ECON 202</td>
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<td>GEOL 122</td>
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<td>GEOL 124</td>
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<td>GEOL 121</td>
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**Sophomore**

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<td>Legal Ethical Issues in Business</td>
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<td>CON 251</td>
<td>Materials Testing and Processing</td>
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<td>CON 261</td>
<td>Construction Surveying</td>
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<td>SPCM 200</td>
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<td>Global and Cultural Awareness</td>
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**Semester 4**

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<td>Fundamentals of Accounting</td>
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<td>Construction Estimating I</td>
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<td>CON 317</td>
<td>Safety Management</td>
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<td>Construction Field Management</td>
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<td>CON Elective (See Department List on Concentration Requirements tab)</td>
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<td>If taking CON 487B (12 week internship), complete 500 hours work experience</td>
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**Junior**

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<td>CON 360</td>
<td>Electrical and Control Systems</td>
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<td>3</td>
</tr>
<tr>
<td>CON 365</td>
<td>Construction Estimating II</td>
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<td>4A</td>
<td>3</td>
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<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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Semester 6

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<td>CON 366</td>
<td>Construction Equipment and Methods</td>
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<tr>
<td>CON 367</td>
<td>Construction Contracts/Project Administration</td>
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<tr>
<td>CON 371</td>
<td>Mechanical and Plumbing Systems</td>
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<tr>
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<td>Advanced Writing</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

If taking CON 487B (12 week internship), complete Work Documentation Packet and submit to Internship Office no later than Friday of finals week the December prior to your internship.

Semester 7

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CON 487A</td>
<td>Internship: Construction Management I</td>
<td></td>
<td></td>
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<tr>
<td>CON 487B</td>
<td>Internship: Construction Management II</td>
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</table>

Senior

Semester 8

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CON 459</td>
<td>Structures II</td>
<td></td>
<td></td>
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<tr>
<td>CON 461</td>
<td>Construction Scheduling and Cost Control</td>
<td></td>
<td></td>
<td>4A</td>
<td>3</td>
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<tr>
<td>MGT 473</td>
<td>Employment Relations: Labor and Management</td>
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<tr>
<td>CON Elective</td>
<td>(See Department List on Concentration Requirements Tab)</td>
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Semester 9

<table>
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<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>CON 462</td>
<td>Financial Management for Construction</td>
<td></td>
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<tr>
<td>CON 465</td>
<td>Construction Management Professional Practice</td>
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<tr>
<td>CON 469</td>
<td>Soils Engineering for Construction Managers</td>
<td></td>
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</tr>
</tbody>
</table>

If CON 487B taken, Technical Elective (See Department List on Concentration Requirements Tab).

The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

Master of Science in Construction Management, Plan A

Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Core Requirements - Required of All Students</td>
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</tr>
<tr>
<td>CON 502</td>
<td>Research in Construction Management I</td>
<td>3</td>
</tr>
<tr>
<td>CON 503</td>
<td>Research in Construction Management II</td>
<td>3</td>
</tr>
<tr>
<td>CON 511</td>
<td>Project Procurement and Preconstruction</td>
<td>3</td>
</tr>
<tr>
<td>CON 512</td>
<td>Post-Award Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>CON 521</td>
<td>Sustainable Building &amp; Infrastructure Systems</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Thesis</th>
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<tr>
<td>CON 699</td>
<td>Thesis</td>
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<table>
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<th>Electives</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

A minimum of 33 credits are required to complete this program.

Master of Science in Construction Management, Plan B

Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>CON 503</td>
<td>Research in Construction Management II</td>
<td>3</td>
</tr>
<tr>
<td>CON 511</td>
<td>Project Procurement and Preconstruction</td>
<td>3</td>
</tr>
<tr>
<td>CON 512</td>
<td>Post-Award Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>CON 521</td>
<td>Sustainable Building &amp; Infrastructure Systems</td>
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</table>

<table>
<thead>
<tr>
<th>Research</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CON 698</td>
<td>Research</td>
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</tr>
</tbody>
</table>

With approval by advisor. A minimum of one CON graduate elective course is required (cannot be CON 695). A maximum of 3 credits of CON 695 are allowed.
Minor in Construction Management

About the Minor
The Construction Management minor is designed to provide students an opportunity to study basic concepts of construction, materials, techniques, design, and managerial skills required for the construction industry. The CM minor has admission criteria and consists of nine courses beginning with CON 101 Introduction to Construction Management. The minor will take students a minimum of five semesters to complete.

How to Add the CM Minor
Students must meet with a CM Advisor to declare interest in the minor and will be given an override to register for CON 101. An online application must be completed and once a student satisfies the following criteria he or she will be admitted to the minor and allowed to register for additional required CON courses.

Admission Criteria
- Earn a minimum 2.750 cumulative CSU GPA
- Complete CON 101 with a “B” grade or better
- Complete CO 150 with a “B” grade or better
- Complete MATH 125 with a “C” grade or better

Once a student has met the minimum requirements listed above he or she is eligible to apply to the CM Minor program. Students are admitted each semester in May and December.

Requirements
Effective Fall 2015
Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON 101</td>
<td>Introduction to Construction Management</td>
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<tr>
<td>CON 131</td>
<td>Graphic Communications for Construction</td>
<td>2-3</td>
</tr>
<tr>
<td>INTD 256</td>
<td>Computer-Aided Design for Interior Designers</td>
<td></td>
</tr>
<tr>
<td>CON 151</td>
<td>Construction Materials and Methods</td>
<td>3</td>
</tr>
<tr>
<td>CON 265</td>
<td>Construction Estimating I</td>
<td>3</td>
</tr>
<tr>
<td>CON 317</td>
<td>Safety Management</td>
<td>2</td>
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<tr>
<td>CON 359</td>
<td>Structures I</td>
<td>4</td>
</tr>
<tr>
<td>CON 365</td>
<td>Construction Estimating II</td>
<td>3</td>
</tr>
</tbody>
</table>

A minimum of 36 credits are required to complete this program.

1 With approval by advisor. A minimum of two CON graduate elective courses are required (cannot be CON 695). A maximum of 3 credits of CON 695 are allowed.

Department of Design and Merchandising

Office in Aylesworth Hall SE, Room 150
(970) 491-1629
dm.chhs.colostate.edu (http://www.dm.chhs.colostate.edu)

Professor Nancy Miller, Department Head

Mission Statement
An ongoing commitment to cultivating innovative and socially responsible solutions to local and global human-centered opportunities and challenges in apparel, interior design, merchandising, and product development by:

2. Addressing and communicating future societal needs by analyzing historic and current needs, as well as considering national and international perspectives.
3. Incorporating a pragmatic and socially responsible approach to teaching, research, and engagement.
4. Applying technology in pursuit of creative human-centered solutions to societal needs.
5. Designing, producing, and marketing industry-relevant products and services for diverse populations.
7. Enhancing students’ preparedness through experiential, collaborative, community, and industry-based learning.
8. Fostering students’ intellectual curiosity, objectivity, and independence, as well as their ability to critically evaluate information and to use resources in addressing problems.
9. Advancing interdisciplinary and global perspectives.
10. Maximizing business, cultural, and socially responsible opportunities enhancing and highlighting the principles of design.
Undergraduate

Majors

- Major in Apparel and Merchandising
  - Apparel Design and Production Concentration
  - Merchandising Concentration
  - Product Development Concentration

- Major in Interior Design

Minors

- Minor in Merchandising

Graduate

Graduate Programs in Design and Merchandising

The department offers graduate programs leading to a Master of Science degree in Design and Merchandising. Students may specialize in Apparel and Merchandising or Interior Design. For more information about program emphases and requirements, contact the department. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Design and Merchandising (http://www.dm.chhs.colostate.edu).

Learning Outcomes

Design and Merchandising graduate students will:

- Demonstrate mastery of design and merchandising concepts and theories in their respective focal areas, including apparel design and production, consumer behavior, creativity, merchandising, interior design, social/cultural/historical aspects of dress and design, sustainability/resilience, and textile science.
- Critically review and interpret research through a review of literature relevant to a research problem or challenge.
- Demonstrate an understanding of how to conduct and implement original research in design and merchandising as demonstrated through problem identification, literature review, study design, data collection, and data analysis/interpretation.
- Effectively communicate outcomes of design and merchandising research in diverse presentation formats (e.g., oral, written, visual).
- Graduates of the Master of Science in Design and Merchandising will be successful in procuring positions in industry or academia and/or admission to doctoral-level programs.
- Be involved in co-curricular activities.

Certificate

Evidence-Based Design

Master Programs

- Master of Science in Design and Merchandising, Plan A
- Master of Science in Design and Merchandising, Plan B, Apparel and Merchandising Specialization
- Master of Science in Design and Merchandising, Plan A, Interior Design Specialization

Courses

Subjects in this department include: Apparel and Merchandising (AM), Design and Merchandising (DM), and Interior Design (INTD).

Apparel and Merchandising (AM)

AM 101 Fashion Industries Credits: 3 (3-0-0)
Course Description: Development, organization, and trends of domestic and foreign fashion industries.
Prerequisite: None.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 110 Apparel and Merchandising Digital Technology Credits: 3 (2-2-0)
Course Description: Introduction to computer technologies used in apparel and merchandising industries.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 130 Design Foundation-Apparel and Merchandising Credits: 3 (3-0-0)
Course Description: Impact of elements and principles of design on apparel and merchandising within 20th century art.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 143 Introduction to Apparel Design Credits: 4 (2-4-0)
Course Description: Apparel and garment-pattern development, construction, quality, skill development in technical drawing and rendering.
Prerequisite: None.
Registration Information: Acceptance into Apparel Design and Production program concentration required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 240 Computer-Aided Apparel Design Credits: 3 (0-6-0)
Course Description: Apparel design using the computer to generate drawings for fabric, graphic logo, and apparel.
Prerequisite: AM 143.
Registration Information: Portfolio review required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AM 241  Apparel Production  Credits: 3 (1-4-0)
Course Description: Production processes of sewn textile products, flat pattern, pattern grading, marker making, and writing specifications.
Prerequisite: (AM 143) and (MATH 117) and (MATH 118) and (MATH 124, may be taken concurrently).
Registration Information: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 243  Adobe Photoshop for Textile Design  Credits: 3 (3-0-0)
Course Description: Textile design using Adobe Photoshop to generate drawings for surface and structural textile design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 250  Clothing, Adornment and Human Behavior (GT-SS3)  Credits: 3 (3-0-0)
Course Description: Psychological, sociological and cultural factors influencing clothing and adornment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 270  Merchandising Processes  Credits: 3 (3-0-0)
Course Description: Forecasting, planning, evaluating, and presenting merchandise lines to meet target market demands.
Prerequisite: (AM 101 with a minimum grade of C and AM 130 with a minimum grade of C and DM 120 with a minimum grade of C) and (MATH 124).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 275  Product Development I  Credits: 3 (3-0-0)
Course Description: Fundamental techniques and skills applied to the development of apparel and textile products.
Prerequisite: AM 101 with a minimum grade of C and AM 110 and AM 130 with a minimum grade of C and MATH 124.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 290  Workshop  Credits: Var[1-18] (0-0-0)
Course Description: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Offered as an online course only.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 321  Advanced Textiles  Credits: 3 (3-0-0)
Course Description: Textile product serviceability; effect of fiber structure on properties and performance; new developments.
Prerequisite: DM 120.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 330  Textile and Apparel Economics  Credits: 3 (3-0-0)
Course Description: Manufacture of textile and apparel products; structure of the industries; international trade and consumption.
Prerequisite: (AM 270 with a minimum grade of C and DM 272 with a minimum grade of C) and (AREC 202 with a minimum grade of C or ECON 202 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 335  Textiles and Apparel Supply Chains  Credits: 3 (3-0-0)
Course Description: Managing the flow of materials, information, and finances as they move in a process from supplier to retailers and consumers in a global environment.
Prerequisite: AM 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 341  Computer-Aided Apparel Production  Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading, and marker making.
Prerequisite: AM 241.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 342  Computer-Aided Textile Design  Credits: 3 (0-6-0)
Course Description: Computer-aided technology and multicultural research used to create repeat fabric design; fabric printing using silkscreen.
Prerequisite: AM 110.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 344  Adobe Illustrator for Apparel Design  Credits: 3 (0-0-3)
Course Description: Apparel design using Adobe Illustrator to generate drawings for garment technical sketching, fashion illustration, and graphic logos.
Prerequisite: AM 243, may be taken concurrently.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
AM 345  Draping Design  Credits: 3 (0-6-0)
Course Description: Apparel designing through basic draping techniques.
Prerequisite: AM 241.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 363 Historic Costume  Credits: 3 (3-0-0)
Course Description: Influence of social, political, and economic conditions on costume of predynastic Egypt to present time.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 364 History of Fashion Designers/Manufacturers  Credits: 3 (0-0-3)
Course Description: Fashion designers and manufacturers who established the field and their contemporaries.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 366 Merchandising Promotion  Credits: 3 (3-0-0)
Course Description: Activities used to influence sale of merchandise and services; to promote trends and ideas.
Prerequisite: AM 270 or MKT 300 or MKT 305.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 370 Fashion Trend Analysis and Forecasting  Credits: 3 (3-0-0)
Course Description: Fashion trend analysis and forecasting between markets and products; the direction of fashion.
Prerequisite: AM 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 371 Merchandising Systems  Credits: 4 (3-2-0)
Course Description: Business mathematics and current practices related to acquisition, negotiation, distribution, and sale of merchandise.
Prerequisite: (ACT 205 or ACT 210) and (AM 270 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 375 Product Development II  Credits: 3 (2-2-0)
Course Description: Product design and development for apparel and other soft goods through industry-driven projects.
Prerequisite: DM 272 with a minimum grade of C and AM 270 with a minimum grade of C and AM 275.
Registration Information: Must register for lecture and lab. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 384 Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 421 Textiles Product Quality Assessment  Credits: 3 (2-2-0)
Course Description: Role of quality assurance in product development, production, performance, and user satisfaction with sewn products and the textile and other components of those products.
Prerequisite: DM 120.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 430 International Retailing  Credits: 3 (3-0-0)
Course Description: Application of retail principles to analyze the internationalization process of retailing.
Prerequisite: AM 330 and DM 360 or MKT 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 446 Apparel Design and Production  Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading and marker making; final portfolio preparation and review.
Prerequisite: AM 341 and AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 450 Social-Psychological Aspects of Clothing  Credits: 3 (3-0-0)
Course Description: Psychological and social factors influencing clothing and its effect on others.
Prerequisite: AM 250 and PSY 100 or SOC 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 460 Historic Textiles  Credits: 3 (3-0-0)
Course Description: Historic development of textiles from a global perspective, focusing on textiles produced by diverse cultures.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 466 Retail Environment Design and Planning  Credits: 3 (2-2-0)
Course Description: Application of design/merchandising principles to retail selling environments, including traditional store design/layout, direct mail, and websites.
Prerequisite: AM 130 and AM 270.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
AM 475  Product Development III  Credits: 3 (3-0-0)
Course Description: Technology-based product innovation for positive social and environmental impacts.
Prerequisite: AM 335 and AM 375.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 479  Merchandising Policies and Strategies  Credits: 3 (3-0-0)
Course Description: Examination of merchandising environment as influenced by its structure, and economic, legal, demographic, and psychographic trends.
Prerequisite: (AM 270 and AM 330 and AM 366 and AM 371) and (DM 360 or MKT 360).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 495A  Independent Study: Merchandising  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495B  Independent Study: Apparel Design and Production  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495D  Independent Study: Textiles and Clothing  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496A  Group Study: Merchandising  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496B  Group Study: Apparel Design  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496C  Group Study: Apparel Production  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496D  Group Study: Textiles and Clothing  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 500  Apparel Supply Chains/Social Responsibility  Credit: 1 (1-0-0)
Course Description: Challenges for social responsibility in the context of the structure, relationships, and long-standing practice of the apparel industry.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 525  Application of Textile Technology to Design  Credits: 3 (1-2-1)
Course Description: Advanced study of textile technology in apparel, merchandising and interior design; recent advances in the field.
Prerequisite: AM 321 or AM 421.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 546  Theoretical Apparel Design  Credits: 3 (1-2-1)
Course Description: Applications of theoretical frameworks and computer-aided design techniques for the development of wearable and fiber art.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 550  Appearance, Self, and Society  Credits: 3 (0-0-3)
Course Description: Analysis of social science theories and concepts as they apply to appearance and dress research.
Prerequisite: AM 450 or PSY 000 to 9999 - at least 6 credits or SOC 000 to 9999 - at least 6 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 572  Merchandising Theories and Strategies  Credits: 3 (0-0-3)
Course Description: Theoretical perspective on the design and development of merchandising strategies for U.S. and global production, distribution, and consumption.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Graduate standing or written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 590B  Workshop: Apparel  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Design and Merchandising (DM)

DM 120 Textiles Credits: 3 (2-2-0)  
Course Description: Fibers, fabrics, and finishes basic to selection, use, and care.  
Prerequisite: None.  
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

DM 192 Design and Merchandising First Year Seminar Credit: 1 (0-0-1)  
Course Description: Introduction to the Apparel and Merchandising and Interior Design majors, career options, campus resources, tools for academics, and industry topics.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

DM 272 Consumers in the Marketplace Credits: 3 (3-0-0)  
Course Description: Analysis and evaluation of consumers in the marketplace as applied to merchandising.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

DM 360 Retailing Credits: 3 (3-0-0)  
Also Offered As: MKT 360.  
Course Description: Retail markets, institutions, operations, and problems.  
Prerequisite: MKT 300 or MKT 305.  
Registration Information: Credit not allowed for both DM 360 and MKT 360. Sections may be offered: Online.  
Terms Offered: Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

DM 400 U.S. Travel-New York City Credits: 3 (1-2-1)  
Course Description: Interview/analyze designers, manufacturers, buying offices, retail stores, magazine firms, interior design and architecture firms, etc.  
Prerequisite: None.  
Registration Information: Must have taken 6 credits in the following courses: DM, AM, INTD. Must register for lecture, laboratory, and recitation.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

DM 470B International Design and Merchandising: Interior Design Credits: 2 (1-0-1)  
Course Description: Historical, cultural, and business aspects of international design and merchandising in selected countries.  
Prerequisite: ART 100 and INTD 129 and INTD 166 and DM 482B, may be taken concurrently.  
Registration Information: Must have concurrent registration in DM 482B. Must register for lecture and recitation.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

DM 482 Travel Abroad Credit: 1 (0-0-1)  
Course Description: Historical, cultural, aesthetic, and business aspects of design and merchandising in the selected country(ies).  
Prerequisite: AM 101 and AM 130 and DM 120 and DM 470A, may be taken concurrently.  
Registration Information: Must have concurrent registration in DM 470A.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

DM 487A Internship: Merchandising Credits: Var[12-16] (0-0-0)  
Course Description:  
Prerequisite: (AM 371) and (DM 360 or MKT 360) and (DM 492).  
Registration Information: GPA 2.50.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

DM 487B Internship: Apparel Design and Production Credits: Var[12-16] (0-0-0)  
Course Description:  
Prerequisite: AM 244 and DM 492.  
Registration Information: GPA 2.50.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

DM 487C Internship: Product Development Credits: Var[12-16] (0-0-0)  
Course Description:  
Prerequisite: AM 375 and DM 492.  
Registration Information: GPA 2.500.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

DM 487F Internship: General Credits: Var[3-16] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Written consent of instructor; GPA2.500.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
DM 490A Workshop: Merchandising Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490B Workshop: Apparel Design and Production Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490C Workshop: Interior Design Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 492 Preinternship Seminar Credits: 2 (1-0-1)
Course Description: Professional standards and corporate structure of apparel and merchandising companies in apparel design, product development, and/or merchandising.
Prerequisite: None.
Registration Information: Minimum 2.5 GPA; minimum of 60 credits completed. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of three credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 501 Research and Theory-Design and Merchandising Credits: 3 (0-0-3)
Course Description: Theory and various approaches and philosophies of research in design and merchandising. Critical evaluation and synthesis of scholarly literature.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 510 Consumer Behavior Credits: 3 (3-0-0)
Course Description: Evaluation of psychological, sociological, and cultural theories of consumer behavior through examination of factors that influence decision making.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 518 Consumer Issues-Global Perspectives Credits: 3 (3-0-0)
Course Description: Understanding and analysis of consumer well-being and issues from global perspective.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DM 520 Promotional Strategies in Merchandising Credits: 3 (3-0-0)
Course Description: Integrated marketing communications while fostering cultural and global awareness, social responsibility and ethical decision-making.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 542 Advanced Computer-Aided Textile Design Credits: 3 (1-4-0)
Course Description: Use of computer-aided design system to produce fabric designs for apparel or interior professional end use.
Prerequisite: AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

DM 551 Research Methods Credits: 3 (3-0-0)
Course Description: Design and methods of research applicable to design and merchandising.
Prerequisite: DM 501.
Registration Information: DM 501 or permission of instructor.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 563 Care and Exhibit of Museum Collections Credits: 3 (1-2-1)
Course Description: Hands-on experience in management, care, exhibition, and interpretation of museum collections.
Prerequisite: ART 100 to 499 - at least 3 credits or HIST 100 to 499 - at least 3 credits or AM 100 to 499 - at least 3 credits or DM 100 to 499.
Registration Information: Must register for lecture, laboratory and recitation. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 570 Creativity in Design Credits: 3 (0-0-3)
Course Description: Multiple perspectives in creativity integrating theory and research impacting design.
Prerequisite: DM 501.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
DM 575 Human Factors in Design--Softlines  Credits: 3 (3-0-0)
Course Description: Theories and contemporary issues related to human factors in design with a specific focus on interior, apparel, and footwear products.
Prerequisite: DM 501, may be taken concurrently.
Registration Information: DM 501 or concurrent registration.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 578 Trends-Consumer Issues  Credits: 3 (2-0-1)
Course Description: Development and projections of consumer issues.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

DM 590A Workshop: Merchandising  Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590B Workshop: Apparel Design and Production  Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590C Workshop: Interior Design  Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 592 Seminar  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 596 Group Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 684 Supervised College Teaching  Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 687 Internship  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 695 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 698 Research  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Interior Design (INTD)

INTD 129 Introduction to Interior Design  Credits: 3 (3-0-0)
Course Description: Interior design discipline's professional values with emphasis on elements and principles of design.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 166 Visual Communication-Sketching  Credits: 3 (0-6-0)
Course Description: Hand drafting, free-hand sketching and conceptualization to communicate interior design concepts visualizing 2 and 3 dimensional representations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 200 Housing Values in America  Credits: 3 (3-0-0)
Course Description: Housing issues in the U.S.; values, norms, roles of government and building professions; interaction of issues with U.S. public values to meet housing needs.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 201 Two-Dimensional Fundamentals-Interior Design Credits: 3 (0-6-0)
Course Description: Demonstration of 2-dimensional elements and principles of design incorporating creative thinking, design fundamentals, design communication skills.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 210 Interior Design Anatomy Credits: 3 (3-0-0)
Course Description: Applying basic concepts of human behavior, anthropometrics, and space planning to residential interiors.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 233 Interior Design Technologies Credits: 3 (2-2-0)
Course Description: Principles and procedures required in interpreting and producing building site plans, floor plans, elevations, sections, and interior details.
Prerequisite: INTD 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 255 Residential Interiors Credits: 3 (0-0-3)
Course Description: Theories, issues, and planning elements that impact the design of residential interiors.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 296A Group Study: Space Planning and Application Credits: Var[1-3] (0-0-0)
Course Description: Application of design process to small interior design projects. Design solutions communicated using manual and technology tools.
Prerequisite: INTD 256 and INTD 210 and INTD 236.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 296B Group Study: Design Application Credits: Var[1-3] (0-0-0)
Course Description: Application of lighting design in interior environments.
Prerequisite: CON 371, may be taken concurrently and INTD 276 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

INTD 336 Color Credits: 3 (0-0-3)
Course Description: Color theories, principles, trends and application in design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 340 Interior Materials and Finishes Credits: 3 (3-0-0)
Course Description: Analysis of materials and resources for interiors.
Prerequisite: INTD 276 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 350 Codes-Health and Safety Credits: 3 (3-0-0)
Course Description: Health and safety issues in interior design, including codes, regulations, and universal design.
Prerequisite: (INTD 210) and (INTD 276, may be taken concurrently or INTD 376, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 356 Professional Communications-Interior Design Credits: 3 (3-0-0)
Course Description: Mastery of written communication skills required in the field of interior design.
Prerequisite: (CO 150 or HONR 193) and (INTD 276 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 359 History of Interior Design Credits: 3 (3-0-0)
Course Description: Survey of interior design history from ancient times through the present.
Prerequisite: INTD 276 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 376 Interior Design II Credits: 3 (0-6-0)
Course Description: Application of design components to medium-scale residential and non-residential interior design projects.
Prerequisite: INTD 330 and INTD 340 and CON 371.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 384 Supervised College Teaching Credits: Var[1-10] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 400 Interior Design Research Proposal Credits: 4 (1-4-1)
Course Description: Research, development, and presentation of a programming proposal for a large scale interior design project with service learning component.
Prerequisite: INTD 376 with a minimum grade of C.
Registration Information: Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 450 Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: CON 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both INTD 450 and CON 450.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 476 Interior Design Project Credits: 4 (0-8-0)
Course Description: Large scale projects representing research-based design solutions, illustrating synthesis and analysis of entry level concepts, portfolio development.
Prerequisite: INTD 400 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

INTD 487 Internship Credits: Var[3-16] (0-0-0)
Course Description:
Prerequisite: INTD 356 and INTD 376 with a minimum grade of C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496A Group Study: Program Skills Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496B Group Study: Design Application Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 550 Universal Design Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of universal design as it applies to diverse population segments and interior environments.
Prerequisite: INTD 376 with a minimum grade of C, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Major in Apparel and Merchandising

The Apparel and Merchandising program emphasizes the study of product design and development; promotion, distribution, and retailing; and consumer behavior in the global environment, while fostering cultural awareness and a commitment to social responsibility. There are three concentrations in the major: Apparel Design and Production, Merchandising, and Product Development.

Learning Outcomes

Students will demonstrate their understanding and apply core design, merchandising, textiles science, and technical skills relative to their program areas. The three concentrated areas include:

- Apparel Design and Production core skills will include, but are not limited to: use of industry-related technology for sketching pattern drafting, marker making, constructing; and crossing disciplines to include properties of design conceptual development technical production specifications communication, materials sourcing, and marketing strategies.

- Merchandising core skills will include, but are not limited to: domestic and global retailing, merchandise buying, sales and customer service, product forecasting, product promotion, consumer behavior; and crossing disciplines to include knowledge and skills in accounting/budgeting, purchasing, management, and marketing.

- Product Development core skills will include, but are not limited to: market research, product design and development, prototypes, specification sheets, global sourcing, and supply chain management. Skills in this concentration are enhanced through industry related technology. Students in the Apparel and Merchandising major will be able to assess and synthesize multiple factors in creating/producing quality products, services, and design solutions. The factors will address human, design, industry and business, global, science, and technology sensitivities.

Students will be able to describe their understanding of multiple processes that are involved in the practice of apparel design and production, merchandising, and product development. These processes include but are not limited to critical and creative thinking, communication, ethics, social responsibility and sustainability, collaborative, and interdisciplinary.

Students will distinguish and demonstrate qualities of professionalism and business practice that contribute to the industry, and advance the value of their knowledge to the near and/or built environments.

Students will enroll in Internships credits at least one semester before graduation and a pre-internship course during their third year in the major. Placement with businesses and organizations in national and international settings are intended to facilitate depth and integration of knowledge in the study of apparel and merchandising and to enhance students’ professional development and career opportunities. Students with a 2.500 GPA are eligible to participate in department-facilitated internships.

Students who engage in co-curricular learning experiences will have the opportunity to visit apparel and fashion headquarters, manufacturers, and markets, network with industry professionals, engage in project based learning experiences, assist with department recruiting events and new student orientations, and participate in a variety of leadership events.

Potential Occupations

Example careers for Apparel Design and Production graduates include, but are not limited to: apparel and fashion designer, computer-aided design (CAD) manager, creative director, design director, fashion illustrator, fashion magazine editorial contributor, fashion stylist, pattern-maker, technical designer, trend/fashion forecaster.

Example careers for Merchandising graduates include, but are not limited to: brand/product merchandise manager, merchandise buyer, retail analyst, retail manager, retail store/website planner, resident buying office administrator, sales representative, showroom coordinator/manager, inventory control agent, consumer or market researcher, product trend analyst, advertising and promotions coordinator/manager, public relations specialist, social media specialist, and visual merchandiser.

Example careers for Product Development graduates include, but are not limited to: consumer or market researcher, product designer/developer, prototype engineer, import/export specialist, sourcing agent, product testing specialist, production manager, quality control agent, and sourcing agent.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Restriction</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Terms Offered</th>
<th>Registration Information</th>
<th>Prerequisite</th>
<th>Course Description</th>
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<tbody>
<tr>
<td>INTD 575</td>
<td>Problems-Interior Design</td>
<td>Var[1-8]</td>
<td>(0-0-0)</td>
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<td>INTD 578</td>
<td>Trends/Issues in Interior Design</td>
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<td>INTD 675</td>
<td>Problems-Interior Design</td>
<td>Var[1-8]</td>
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</table>
Concentrations

- Apparel Design and Production Concentration
- Merchandising Concentration
- Product Development Concentration

Major in Apparel and Merchandising, Apparel Design and Production Concentration

In the Apparel Design & Production concentration, the curriculum focuses on the development of knowledge and skills necessary to engage in the design of textile and apparel goods for an identified target market, including coursework in aesthetics and design, fashion/trend forecasting, fashion illustration, pattern development; material selection (e.g., fibers, fabrics, dyes/finishes), apparel construction techniques, computer-aided design (CAD), historic textiles and costume, and social-psychological aspects of dress.

Students applying to the Apparel Design and Production concentration are accepted first into the Apparel and Merchandising major. Full acceptance into the Apparel Design and Production concentration requires passing the Portfolio Review held in the fall semester. Industry professionals in the field of apparel design and manufacturing will evaluate portfolios. The 20 to 25 highest scoring students will be accepted into the Apparel Design and Production concentration and become eligible to take the Apparel Design and Production courses in the concentration.

Requirements

Effective Fall 2015

Freshman

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AM 101</td>
<td>Fashion Industries</td>
<td></td>
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<tr>
<td>AM 110</td>
<td>Apparel and Merchandising Digital Technology</td>
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<tr>
<td>AM 130</td>
<td>Design Foundation-Apparel and Merchandising</td>
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<tr>
<td>AM 143</td>
<td>Introduction to Apparel Design</td>
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<tr>
<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
<td>3A</td>
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<td>CHEM 104</td>
<td>Chemistry in Context Laboratory (GT-SC1)</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>DM 120</td>
<td>Textiles</td>
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<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>PSY 100 or SOC 100</td>
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Elective

Total Credits

Sophomore

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<td>AM 240</td>
<td>Computer-Aided Apparel Design</td>
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<tr>
<td>AM 241</td>
<td>Apparel Production</td>
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<tr>
<td>AM 244</td>
<td>Illustration for Apparel Design</td>
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<tr>
<td>AM 250</td>
<td>Clothing, Adornment and Human Behavior (GT-SS3)</td>
<td>3E</td>
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<tr>
<td>AM 270</td>
<td>Merchandising Processes</td>
<td>3</td>
</tr>
<tr>
<td>AM 275</td>
<td>Product Development I</td>
<td>3</td>
</tr>
</tbody>
</table>
DM 272  Consumers in the Marketplace  3

Choose one from the following:  3

  PHIL 110  Logic and Critical Thinking (GT-AH3)
  STAT 201  General Statistics
  SPCM 200  Public Speaking

Arts and Humanities  3B

Total Credits  30

Junior

AM 341  Computer-Aided Apparel Production  3
AM 342  Computer-Aided Textile Design  4B  3
AM 345  Draping Design  3
AM 363  Historic Costume  4A  3
DM 492  Preinternship Seminar  2

Upper-Division AM or DM Electives\(^1\)  6

Advanced Writing  2
Arts and Humanities  3B

Total Credits  32

Senior

AM 421  Textiles Product Quality Assessment  3
AM 446  Apparel Design and Production  4C  3
AM 460  Historic Textiles  3
DM 487B\(^2\)  Internship: Apparel Design and Production  12

Upper-Division AM or DM Electives\(^1\)  6

Total Credits  27

Program Total Credits:  120

Internship Alternative Courses\(^2\)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>AM 321</td>
<td>Advanced Textiles</td>
<td>3</td>
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<tr>
<td>AM 330</td>
<td>Textile and Apparel Economics</td>
<td>3</td>
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<tr>
<td>AM 342</td>
<td>Computer-Aided Textile Design</td>
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<tr>
<td>AM 344</td>
<td>Adobe Illustrator for Apparel Design</td>
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<td>AM 363</td>
<td>Historic Costume</td>
<td>3</td>
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<tr>
<td>AM 364</td>
<td>History of Fashion Designers/Manufacturers</td>
<td>3</td>
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<tr>
<td>AM 366</td>
<td>Merchandising Promotion</td>
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<td>AM 371</td>
<td>Merchandising Systems</td>
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<td>AM 421</td>
<td>Textiles Product Quality Assessment</td>
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<td>AM 430</td>
<td>International Retailing</td>
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<tr>
<td>AM 450</td>
<td>Social-Psychological Aspects of Clothing</td>
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<td>AM 460</td>
<td>Historic Textiles</td>
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<td>AM 466</td>
<td>Retail Environment Design and Planning</td>
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<td>ART 350</td>
<td>Fibers II</td>
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<td>ART 351</td>
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<td>JTC 301</td>
<td>Corporate and Professional Communication (GT-C03)</td>
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<td>JTC 316</td>
<td>Multiculturalism and the Media</td>
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<td>Reporting: General News</td>
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<td>JTC 320B</td>
<td>Reporting: Sports</td>
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<td>JTC 320C</td>
<td>Reporting: Business</td>
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<td>JTC 320D</td>
<td>Reporting: Government and Political</td>
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<td>JTC 320F</td>
<td>Reporting: Technology and Innovation</td>
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<td>Reporting: Education</td>
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<td>Writing for Specialized Electronic Media</td>
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<td>JTC 411</td>
<td>Media Ethics and Issues</td>
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<td>JTC 471</td>
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<td>Corporate Innovation and Entrepreneurship</td>
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<td>Fundamentals of Entrepreneurship</td>
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<td>MGT 470</td>
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<td>MKT 366</td>
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<tr>
<td>SOC 301</td>
<td>Development of Sociological Thought</td>
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<td>SOC 302</td>
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<td>Social Change</td>
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<td>Symbolic Interaction</td>
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<td>TH 363</td>
<td>Costume Design II</td>
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1. Select upper-division (300- to 400-level) AM or DM courses ending in -00 to -79.
2. Acceptance for DM 487B depends on the student’s GPA and acceptance by a cooperating company. Students not enrolled in an internship will select 12 credits from the department list of Internship Alternative Courses.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Competitive Selection process: Portfolio Review required for all students who desire to declare Apparel Design and Production (ADAZ) concentration. Upon successful passing of the Portfolio Review, students are able to take AM 143. No course requirements to submit a Portfolio, however, a minimum 2.500 cumulative reported GPA is required. 20#25 students selected each Fall and can then declare ADAZ concentration # those are then permitted to enroll in AM 143, AM 241, AM 244, AM 341,AM 345, AM 446.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
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<tr>
<td>AM 101</td>
<td>Fashion Industries</td>
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<td>AM 130</td>
<td>Design Foundation-Apparel and Merchandising</td>
<td></td>
<td>X</td>
<td>3</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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Select one course from the following: 3

- PSY 100 General Psychology (GT-SS3) 3C
- SOC 100 General Sociology (GT-SS3) 3C

**Total Credits** 15

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<td>AM 143</td>
<td>Introduction to Apparel Design</td>
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<tr>
<td>DM 120</td>
<td>Textiles</td>
<td>X</td>
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<tr>
<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
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<td>Chemistry in Context Laboratory (GT-SC1)</td>
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**Total Credits** 16

**Sophomore**

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<td>AM 241</td>
<td>Apparel Production</td>
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<td>AM 244</td>
<td>Illustration for Apparel Design</td>
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<tr>
<td>AM 250</td>
<td>Clothing, Adornment and Human Behavior (GT-SS3)</td>
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<td>3E</td>
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<tr>
<td>DM 272</td>
<td>Consumers in the Marketplace</td>
<td>X</td>
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Select one course from the following: 3

- PHIL 110 Logic and Critical Thinking (GT-AH3) 3B
- STAT 201 General Statistics

AM 130 must be completed by the end of Semester 3. X

**Total Credits** 15

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<tr>
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<td>Computer-Aided Apparel Design</td>
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<td>AM 270</td>
<td>Merchandising Processes</td>
<td>X</td>
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<td>3</td>
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<tr>
<td>AM 275</td>
<td>Product Development I</td>
<td></td>
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<td>3</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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Arts and Humanities 3B 3

A minimum 2.500 GPA is required by the end of Semester 4 in order to enroll in DM 492 during Semester 5.

**Total Credits** 15

**Junior**

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Arts and Humanities 3B 3

Biological and Physical Sciences 3A 3

Historical Perspectives 3D 3

**Total Credits** 15
Upper-Division AM or DM Elective  
AM 241 and AM 244 must be completed by the end of Semester 5.  

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<tr>
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<td>AM 345</td>
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<td>X</td>
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<td>AM 363</td>
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<td>A minimum 2.500 GPA is required by the end of Semester 6 in order to enroll in DM 487 in Semester 8.</td>
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**Senior**

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<td>AM 446</td>
<td>Apparel Design and Production</td>
<td>X</td>
<td>4C</td>
<td>3</td>
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<tr>
<td>AM 460</td>
<td>Historic Textiles</td>
<td>X</td>
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<td>3</td>
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<td>Upper-Division AM or DM Electives</td>
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**Program Total Credits:** 120

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### Major in Apparel and Merchandising, Merchandising Concentration

In the Merchandising concentration, the curriculum focuses on the development of knowledge and skills necessary to engage in the assortment planning, and sale of textile, apparel and other goods that satisfy consumers' needs and preferences, including coursework in consumer behavior, merchandising processes/management, merchandise buying/procurement, promotion, retailing, retail store design, and the global industry (economics, politics, and trade).

### Requirements

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### Effective Fall 2015

**Freshman**

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<thead>
<tr>
<th>Course</th>
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<td>AM 110</td>
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<td>CHEM 104</td>
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### Major in Apparel and Merchandising, Merchandising Concentration

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<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>PSY 100 or SOC 100</td>
<td>General Psychology (GT-SS3)</td>
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**Total Credits**: 31

### Sophomore

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<td>Clothing, Adornment and Human Behavior (GT-SS3)</td>
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<td>Merchandising Processes</td>
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<td>AM 275</td>
<td>Product Development I</td>
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<td>DM 272</td>
<td>Consumers in the Marketplace</td>
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<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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<td>STAT 201 or 204</td>
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**Total Credits**: 30

### Junior

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<td>4B</td>
</tr>
<tr>
<td>AM 366</td>
<td>Merchandising Promotion</td>
<td>3</td>
</tr>
<tr>
<td>AM 371</td>
<td>Merchandising Systems</td>
<td>4</td>
</tr>
<tr>
<td>DM 360/MKT 360</td>
<td>Retailing</td>
<td>3</td>
</tr>
<tr>
<td>DM 492</td>
<td>Preinternship Seminar</td>
<td>2</td>
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<tr>
<td>Select one of the following:</td>
<td></td>
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<tr>
<td>FIN 305</td>
<td>Fundamentals of Finance</td>
<td>3</td>
</tr>
<tr>
<td>MGT 305</td>
<td>Fundamentals of Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division AM or DM Elective$^1$</td>
<td></td>
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</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
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</table>

**Total Credits**: 33

### Senior

<table>
<thead>
<tr>
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<th>Title</th>
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</thead>
<tbody>
<tr>
<td>AM 479</td>
<td>Merchandising Policies and Strategies</td>
<td>4A,4C</td>
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<tr>
<td>DM 487A$^2$</td>
<td>Internship: Merchandising</td>
<td>12</td>
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<td>Upper-Division AM or DM Elective$^1$</td>
<td></td>
<td>6</td>
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<td>Electives</td>
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**Total Credits**: 26

**Program Total Credits**: 120

### Internship Alternative Courses$^2$

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM 321</td>
<td>Advanced Textiles</td>
<td>3</td>
</tr>
<tr>
<td>AM 330</td>
<td>Textile and Apparel Economics</td>
<td>3</td>
</tr>
<tr>
<td>AM 342</td>
<td>Computer-Aided Textile Design</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>AM 344</td>
<td>Adobe Illustrator for Apparel Design</td>
<td>3</td>
</tr>
<tr>
<td>AM 363</td>
<td>Historic Costume</td>
<td>3</td>
</tr>
<tr>
<td>AM 364</td>
<td>History of Fashion Designers/Manufacturers</td>
<td>3</td>
</tr>
<tr>
<td>AM 366</td>
<td>Merchandising Promotion</td>
<td>3</td>
</tr>
<tr>
<td>AM 371</td>
<td>Merchandising Systems</td>
<td>4</td>
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<tr>
<td>AM 421</td>
<td>Textiles Product Quality Assessment</td>
<td>3</td>
</tr>
<tr>
<td>AM 430</td>
<td>International Retailing</td>
<td>3</td>
</tr>
<tr>
<td>AM 450</td>
<td>Social-Psychological Aspects of Clothing</td>
<td>3</td>
</tr>
<tr>
<td>AM 460</td>
<td>Historic Textiles</td>
<td>3</td>
</tr>
<tr>
<td>AM 466</td>
<td>Retail Environment Design and Planning</td>
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<tr>
<td>ART 350</td>
<td>Fibers II</td>
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<tr>
<td>ART 351</td>
<td>Fibers III</td>
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<tr>
<td>ART 450</td>
<td>Fibers IV</td>
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<tr>
<td>ART 451</td>
<td>Fibers V</td>
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<td>DM 360/MKT 360</td>
<td>Retailing</td>
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</tr>
<tr>
<td>DM 400</td>
<td>U.S. Travel-New York City</td>
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<tr>
<td>DM 470A</td>
<td>International Design and Merchandising: Apparel</td>
<td>2</td>
</tr>
<tr>
<td>DM 470B</td>
<td>International Design and Merchandising: Interior Design</td>
<td>2</td>
</tr>
<tr>
<td>DM 474</td>
<td>Fashion Show Production and Event Planning</td>
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<td>DM 482</td>
<td>Travel Abroad</td>
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<tr>
<td>JTC 301</td>
<td>Corporate and Professional Communication (GT-C03)</td>
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<tr>
<td>JTC 310</td>
<td>Copy Editing</td>
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<tr>
<td>JTC 311</td>
<td>History of Media</td>
<td>3</td>
</tr>
<tr>
<td>JTC 316</td>
<td>Multiculturalism and the Media</td>
<td>3</td>
</tr>
<tr>
<td>JTC 320A</td>
<td>Reporting: General News</td>
<td>3</td>
</tr>
<tr>
<td>JTC 320B</td>
<td>Reporting: Sports</td>
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</tr>
<tr>
<td>JTC 320C</td>
<td>Reporting: Business</td>
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<tr>
<td>JTC 320D</td>
<td>Reporting: Government and Political</td>
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</tr>
<tr>
<td>JTC 320E</td>
<td>Reporting: Health and Medicine</td>
<td>3</td>
</tr>
<tr>
<td>JTC 320F</td>
<td>Reporting: Technology and Innovation</td>
<td>3</td>
</tr>
<tr>
<td>JTC 320G</td>
<td>Reporting: Education</td>
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</tr>
<tr>
<td>JTC 320H</td>
<td>Reporting: Special Topics</td>
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</tr>
<tr>
<td>JTC 326</td>
<td>Online Storytelling and Audience Engagement</td>
<td>3</td>
</tr>
<tr>
<td>JTC 340</td>
<td>Digital Video Editing</td>
<td>3</td>
</tr>
<tr>
<td>JTC 342</td>
<td>Writing for Specialized Electronic Media</td>
<td>3</td>
</tr>
<tr>
<td>JTC 350</td>
<td>Public Relations</td>
<td>3</td>
</tr>
<tr>
<td>JTC 361</td>
<td>Writing for Specialized Magazines</td>
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</tr>
<tr>
<td>JTC 372</td>
<td>Web Design and Management</td>
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</tr>
<tr>
<td>JTC 411</td>
<td>Media Ethics and Issues</td>
<td>3</td>
</tr>
<tr>
<td>JTC 412</td>
<td>International Mass Communication</td>
<td>3</td>
</tr>
<tr>
<td>JTC 413</td>
<td>New Communication Technologies and Society</td>
<td>3</td>
</tr>
<tr>
<td>JTC 414</td>
<td>Media Effects</td>
<td>3</td>
</tr>
<tr>
<td>JTC 415</td>
<td>Communications Law</td>
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<tr>
<td>JTC 464</td>
<td>Technical Communication</td>
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</tr>
<tr>
<td>JTC 471</td>
<td>Research for Public Communicators</td>
<td>3</td>
</tr>
<tr>
<td>MGT 320</td>
<td>Contemporary Management Principles/Practices</td>
<td>3</td>
</tr>
<tr>
<td>MGT 330</td>
<td>Corporate Innovation and Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>MGT 340</td>
<td>Fundamentals of Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>MGT 410</td>
<td>Leadership and Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MGT 420</td>
<td>New Venture Creation</td>
<td>3</td>
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<td>MGT 425</td>
<td>Organizational Communication Strategies</td>
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<tr>
<td>MGT 440</td>
<td>New Venture Management</td>
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Major in Apparel and Merchandising, Merchandising Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MGT 470</td>
<td>Managerial Decisions-Issues and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MGT 475</td>
<td>International Business Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 366</td>
<td>Services Marketing</td>
<td>3</td>
</tr>
<tr>
<td>SOC 301</td>
<td>Development of Sociological Thought</td>
<td>3</td>
</tr>
<tr>
<td>SOC 302</td>
<td>Contemporary Sociological Theory</td>
<td>3</td>
</tr>
<tr>
<td>SOC 330</td>
<td>Social Stratification</td>
<td>3</td>
</tr>
<tr>
<td>SOC 342</td>
<td>Leisure and Society</td>
<td>3</td>
</tr>
<tr>
<td>SOC 362</td>
<td>Social Change</td>
<td>3</td>
</tr>
<tr>
<td>SOC 371</td>
<td>Symbolic Interaction</td>
<td>3</td>
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<tr>
<td>SOC 460</td>
<td>Society and Environment</td>
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<tr>
<td>TH 363</td>
<td>Costume Design II</td>
<td>3</td>
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</table>

1. Select upper-division (300- to 400-level) AM or DM courses ending in -00 to -79.
2. Registration for DM 487A depends on acceptance by a cooperating company. Students not enrolled in an internship will select 12 credits from the department list of Internship Alternative Courses.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

Minimum grade requirements for Apparel and Merchandising - Merchandising concentration are as follows: AM 101, AM 130, DM 120, AM 270, DM 272, MATH 117, MATH 118, MATH 124 with grades of C or better. Students in this concentration should also maintain a 2.500 GPA.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AM 101</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>AM 130</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>CO 150</td>
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<tr>
<td>MATH 117</td>
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<td>X</td>
<td>1B</td>
<td>1</td>
</tr>
<tr>
<td>MATH 118</td>
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<td>MATH 124</td>
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<td>1</td>
</tr>
<tr>
<td>PSY 100</td>
<td></td>
<td></td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>SOC 100</td>
<td></td>
<td></td>
<td>3C</td>
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### Sophomore

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<th>Semester 3</th>
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<tbody>
<tr>
<td>ACT 205</td>
<td></td>
<td>X</td>
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<tr>
<td>AM 275</td>
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</tr>
<tr>
<td>DM 272</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 202</td>
<td></td>
<td>X</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td></td>
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### Freshman

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<tr>
<td>AM 250</td>
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<tr>
<td>AM 270</td>
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<td>X</td>
<td></td>
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<tr>
<td>Total Credits</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
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</tbody>
</table>
Select one course from the following:
- STAT 201  General Statistics
- STAT 204  Statistics for Business Students

Arts and Humanities 3B 3

ACT 205, ECON 202 must be completed by the end of Semester 4.

<table>
<thead>
<tr>
<th>Junior</th>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AM 330</td>
<td>Textile and Apparel Economics</td>
<td>X</td>
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<td>3</td>
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<td>AM 366</td>
<td>Merchandising Promotion</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AM 371</td>
<td>Merchandising Systems</td>
<td>X</td>
<td></td>
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<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
<td>X</td>
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<td>Upper-Division AM/DM Elective</td>
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</table>

A minimum 2.500 GPA is required by the end of Semester 5 in order to enroll in DM 492 during Semester 6.

| Total Credits | 15 |

<table>
<thead>
<tr>
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<th>Semester 6</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AM 321</td>
<td>Advanced Textiles</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
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</tbody>
</table>

Select one course from the following:
- DM 360/ MKT 360  Retailing  X |

DM 492  Preinternship Seminar  X 2

Select one course from the following:
- FIN 305  Fundamentals of Finance  X |

Upper-Division AM/DM Elective  3

MGT 305  Fundamentals of Management  | 3 |

Advanced Writing  | 2 |

AM 366, AM 371 must be completed and a minimum 2.500 GPA is required by the end of Semester 6.

| Total Credits | 16 |

<table>
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<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AM 479</td>
<td>Merchandising Policies and Strategies</td>
<td>X</td>
<td></td>
<td>4A,4C</td>
<td>3</td>
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</table>

Upper-Division AM/DM Electives  6

Electives  5

| Total Credits | 17 |

<table>
<thead>
<tr>
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<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>DM 487A</td>
<td>Internship: Merchandising</td>
<td>X</td>
<td></td>
<td></td>
<td>12-16</td>
</tr>
</tbody>
</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

| Total Credits | 12 |

Program Total Credits: 120
Minor in Merchandising

A minor in Merchandising provides students in other majors an opportunity to expand their knowledge of merchandising. The minor may be of special interest to students majoring in areas such as art, business, and journalism and media communication. The perspectives gleaned by selecting a Merchandising minor both enhance understanding of the student’s major program and expand career opportunities available to the student.

The Apparel and Merchandising program emphasizes study in apparel and textile design, product development, marketing and retailing of consumer goods, and sourcing of products. The program encompasses global study of the cultural/historical economic, and scientific aspects of the textile and apparel industry, while fostering understanding of consumer behavior and socially responsible business practices.

Requirements
Effective Fall 1999

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>Lower Division</strong></td>
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</tr>
<tr>
<td>AM 101</td>
<td>Fashion Industries</td>
<td>3</td>
</tr>
<tr>
<td>AM 270</td>
<td>Merchandising Processes</td>
<td>3</td>
</tr>
<tr>
<td>DM 120</td>
<td>Textiles</td>
<td>3</td>
</tr>
<tr>
<td><strong>Upper Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM 330</td>
<td>Textile and Apparel Economics</td>
<td>3</td>
</tr>
<tr>
<td>or AM 366</td>
<td>Merchandising Promotion</td>
<td>3</td>
</tr>
<tr>
<td>AM 371</td>
<td>Merchandising Systems</td>
<td>4</td>
</tr>
<tr>
<td>AM*** Upper-Division Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>DM 360/MKT 360</td>
<td>Retailing</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

1 Select in consultation with advisor. Must be upper-division (300- to 400-level).

Major in Interior Design

The Interior Design program exemplifies the definition of the professional interior designer as qualified by education, experience, and examination to enhance the function and quality of life, increase productivity, and protect the health, safety, and welfare of the public. The program is accredited by the Council for Interior Design Accreditation (CIDA).

Students seeking to apply to the Interior Design major at CSU first are admitted to CSU as Pre-Interior Design. All students who wish to be considered for admission to Interior Design will be required to complete the Interior Design Scenario. Selective advancement into the major is based on the score received at the Interior Design Scenario determined by external reviewers who assess student competencies in writing, drawing, problem solving, and conceptual frameworks. A cohort of approximately 40 students is selected upon completion of the Interior Design Scenario. The Design Scenario occurs annually in spring semester. See the Department of Design and Merchandising (http://www.dm.chhs.colostate.edu) website for more information regarding the Interior Design Scenario.

In order to participate in the Interior Design Scenario students must have the following:

- GPA of 2.5 or higher.
- Completion of or current enrollment in INTD 129 and INTD 166 or equivalent. Equivalent courses from other institutions must be approved at least two weeks prior to the Interior Design Scenario by the Interior Design transfer advisor.

The Interior Design department Academic Support Coordinator will work with Pre-Interior Design students and advise them on their current performance in relation to the possibility of their admission to Interior Design.

Faculty in the Interior Design program value learning as a collaborative effort inviting diversity, design research as a basis for excellence in design practice, and new models for learning to respond to new ways of working. The program guides students toward becoming dedicated interior designers who have strong communication skills, are active as team players and creative problem solvers, and who make a positive impact in the practice of interior design. Students engage in research-based problem solving, providing a solid transition from education to practice in a global community. An internship in interior design practice is required for graduation.
The Interior Design graduate will learn the entirety of the design process, beginning with assessment of client needs through design programming, development of alternative design solutions, development of conceptual and theoretical frameworks, selection of furniture and finish materials, construction documentation, core compliance, and contract administration including project management and post-occupancy evaluation methodologies. In addition, students take coursework in construction/building systems and codes, business principles in interior design, computer-aided design and drafting, animation, multimedia, graphic visualization, interior design history, and sustainable practices.

The teaching facilities include design studios; display, resource, and critique spaces; and computer labs.

**Learning Outcomes**

- **Interior Design core skills** will include but are not limited to: applications of history and culture; space and form; color and light; fixtures, equipment, and finish materials; environmental systems; building systems, and interior construction; technology; and regulations.

- **Students in the Interior Design major** will be able to assess and synthesize multiple factors in creating/producing quality products, services, and design solutions. The factors will address human, design, industry and business, global, science and technology sensitivities.

- **Students** will be able to describe their understanding of multiple processes that are involved in the practice of interior design. These processes include but are not limited to critical and creative thinking, communication, ethics, social responsibility and sustainability, collaborative and interdisciplinary.

- **Students will distinguish and demonstrate qualities of professionalism and business practice** that contribute to the industry, and advance the value of their knowledge to the near and/or built environments.

- **Students will enroll in Internships credits** at least one semester before graduation.

- **Students who engage in co-curricular learning experiences** will have the opportunity to network with industry professionals, engage in project based learning experiences, assist with department recruiting events and new student orientations, and attend a variety of leadership events.

**Potential Occupations**

Students are prepared as entry-level interior designers with competency in design fundamentals, space planning and programming, code compliance, lighting, materials research, project management, and professional practices in the design of diverse interior spaces.

Graduates seek employment in interior design and architecture firms as residential, corporate, retail, health care, institutional, education, and hospitality designers. Graduates also work in lighting design, product development, marketing, research, design-related journalism, illustration, facility management, showroom management, and as manufacturers’ representatives.

**Requirements**

Effective Spring 2017

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 100</td>
<td>Introduction to the Visual Arts (GT-AH1)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>CON 151</td>
<td>Construction Materials and Methods</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>DM 192</td>
<td>Design and Merchandising First Year Seminar</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>INTD 129</td>
<td>Introduction to Interior Design</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 166</td>
<td>Visual Communication-Sketching</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>1B</td>
<td>1</td>
</tr>
<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1B</td>
<td>1</td>
</tr>
<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1B</td>
<td>1</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>4</td>
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<tr>
<td>Electives</td>
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</tbody>
</table>

Total Credits 31

**Sophomore**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTD 210</td>
<td>Interior Design Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>INTD 235</td>
<td>Interior Design Technologies</td>
<td>3</td>
</tr>
<tr>
<td>INTD 236</td>
<td>Three-Dimensional Thinking</td>
<td>3</td>
</tr>
<tr>
<td>INTD 256</td>
<td>Computer-Aided Design for Interior Designers</td>
<td>3</td>
</tr>
<tr>
<td>INTD 266</td>
<td>Visual Communication-Multi-Media</td>
<td>3</td>
</tr>
</tbody>
</table>
Major in Interior Design

INTD 276  Interior Design I  
INTD 350  Codes-Health and Safety  
Historical Perspectives  
Electives  

Total Credits

Junior

Select one course from the following:

AM 460 Historic Textiles  
HIST 354 American Architectural History  
CON 371 Mechanical and Plumbing Systems  
INTD 330 Lighting Design  
INTD 340 Interior Materials and Finishes  
INTD 356 Professional Communications-Interior Design  
INTD 359 History of Interior Design  
INTD 376 Interior Design II  
PSY 316 Environmental Psychology  
Advanced Writing  
Electives  

Total Credits

Senior

INTD 400 Interior Design Research Proposal  
INTD 476 Interior Design Project  
INTD 487 Internship  
Biological and Physical Sciences  
Global and Cultural Awareness  
Upper-Division Electives  

Total Credits

Program Total Credits:

1 Substitute experiences could include study abroad or independent study (service learning) with prior advisor approval.

Major Completion Map

Distinctive Requirements for Degree Program:

First year students are identified as Pre#Interior Design (INT0). Students who qualify for the Selective Advancement Design Scenario must have INTD 129, INTD 166 and a cumulative reported GPA of 2.500 or better to participate. 35#40 students are selected to advance to the Second Year in Interior Design and majors are changed to Interior Design (INTD#BS). The Interior Design major is a cohort program # when students pass the Design Scenario, semesters 3, 4, 5, 6, 7, and 8 are sequential.

Freshman

Semester 1 Critical Recommended AUCC Credits

ART 100 Introduction to the Visual Arts (GT-AH1)  
INTD 129 Introduction to Interior Design  
INTD 166 Visual Communication-Sketching  
CO 150 College Composition (GT-CO2)  
DM 192 Design and Merchandising First Year Seminar  
MATH 117 College Algebra in Context I (GT-MA1)  
MATH 118 College Algebra in Context II (GT-MA1)  
MATH 124 Logarithmic and Exponential Functions (GT-MA1)  
INTD 129, INTD 166 are required for the Selective Advancement Design Scenario.  

Total Credits

16
<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CON 151</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PSY 100</td>
<td></td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
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<td></td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.</td>
<td></td>
<td></td>
<td>X</td>
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</table>

**Total Credits** 15

**Sophomore**

<table>
<thead>
<tr>
<th>Semester 3</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>INTD 210</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 236</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 256</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
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</table>

**Total Credits** 15

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>INTD 235</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 266</td>
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<td>3</td>
</tr>
<tr>
<td>INTD 276</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 350</td>
<td></td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
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<td>3</td>
<td></td>
</tr>
<tr>
<td>PSY 100</td>
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**Total Credits** 15

**Junior**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CON 371</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 330</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 340</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>INTD 356</td>
<td></td>
<td></td>
<td>4A</td>
<td>3</td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AM 460 Historic Textiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIST 354 American Architectural History</td>
<td></td>
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</table>

**Total Credits** 15

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>INTD 359</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>INTD 376</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PSY 316</td>
<td></td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>INTD 356</td>
<td></td>
<td>X</td>
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</tbody>
</table>

**Total Credits** 15
**Master of Science in Design and Merchandising, Plan A**

**Requirements**

**Effective Fall 2001**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>DM 501</td>
<td>Research and Theory-Design and Merchandising</td>
<td>3</td>
</tr>
<tr>
<td>DM 551</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>Specialized research/data analysis methods</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Breadth**

| Out-of-department Course | 3 |

**Specialization Courses**

| Select a minimum of 12 credits | 12 |

**Thesis**

| DM 699 | Thesis | 6 |

**Total Credits**

| 30 |

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course from department list with approval of advisor.
2. Select an out-of-department course at the 500-level with approval of advisor.
3. Select 500-level courses from the AM, DM, or INTD subject codes with approval of advisor.

---

**Master of Science in Design and Merchandising, Plan B, Apparel and Merchandising Specialization**

**Requirements**

**Effective Summer 2008**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM 501</td>
<td>Research and Theory-Design and Merchandising</td>
<td>3</td>
</tr>
<tr>
<td>DM 551</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>Specialized research/data analysis methods</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Content Coursework**

| Select courses from AM, DM, or INTD subject codes | 15 |

**Paper/Project**

| DM 698 | Research | 3 |

**Breadth**

| At least 3 credits in out-of-department courses | 3 |

**Total Credits**

| 30 |

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course which must be approved by the student's committee. In some cases, students may need to complete prerequisites before enrolling in approved data analysis courses.
2. Select courses with approval from advisor.
Master of Science in Design and Merchandising, Plan A, Interior Design Specialization

Requirements

Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM 501</td>
<td>Research and Theory-Design and Merchandising</td>
<td>3</td>
</tr>
<tr>
<td>DM 551</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Specialized research/data analysis methods</td>
<td>3</td>
</tr>
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</table>

Breadth

<table>
<thead>
<tr>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out-of-department Course</td>
<td>3</td>
</tr>
</tbody>
</table>

Specialization Courses

Select a minimum of 12 credits

Thesis

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM 699</td>
<td>Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credits

30

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course from department list with approval of advisor.
2. Select an out-of-department course at the 500-level with approval of advisor.
3. Select 500-level courses from the AM, DM, or INTD subject codes with approval of advisor.

Master of Science in Design and Merchandising, Plan B, Interior Design Specialization

Requirements

Effective Spring 2010

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM 501</td>
<td>Research and Theory-Design and Merchandising</td>
<td>3</td>
</tr>
<tr>
<td>DM 551</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Specialized research/data analysis methods</td>
<td>3</td>
</tr>
</tbody>
</table>

Content Coursework

Select a minimum of 15 credits from AM, DM, INTD prefixes

Breadth

<table>
<thead>
<tr>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out-of-department Course</td>
<td>3</td>
</tr>
</tbody>
</table>

Paper/Project

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM 698</td>
<td>Research</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits

30

A minimum of 30 credits are required to complete this program.

1. Select a minimum of one course with approval of graduate committee.
2. Select courses with advisor approval.
3. A minimum of 3 credits taken outside the department in addition to the specialized research/data analysis course(s), with advisor approval.

School of Education

Office in Education Building, Room 209
(970) 491-6317
soe.chhs.colostate.edu (http://soe.chhs.colostate.edu)

Center for Educator Preparation (CEP)

Office in Education Building, Room 111
(970) 491-5292
c (http://stepp.chhs.colostate.edu)ep.chhs.colostate.edu (http://www.cep.chhs.colostate.edu)

The CSU Educator Preparation Program is nationally accredited by the Council for the Accreditation of Educator Preparation (CAEP) and state accredited by the Colorado Department of Education and the Colorado Department of Higher Education.

Section 207 of Title II of the Higher Education Act mandates that the Department of Education collect data on state requirements for teacher certification and licensure, as well as data on the performance of teacher preparation programs. The Title II Institutional Report for CSU is available through the Educator Preparation website (http://www.cep.chhs.colostate.edu/school/accreditation.aspx).

Learning Outcomes

Students will demonstrate:

- Employment of innovative instructional methods to promote student success and to meet state and national standards
- Understanding of how students differ in their approaches to learning and create instructional opportunities that are adapted to diverse learners
- Mastery of the content knowledge students will use for teaching a subject
- Ability to impact learning of P-12 students through course work and field experiences
- Knowledge of education governance and about careers in teaching

Potential Occupations

Examples include: public or private school teacher, principal, staff developer, educational sales, school counselor, school social worker,
school occupational therapist, curriculum specialist, human resources
trainer, post-secondary teacher, and early childhood center director.

One of the most important ways to help people and to impact our society
is through involvement in public and private schools. Teachers make
lasting contributions to our nation and its many generations of learners.
Teacher education programs at CSU serve the needs of individuals
preparing to teach in most secondary areas, K-12 art, foreign languages,
instructional technology, and music, or early childhood education.
CSU is one of the public institutions in Colorado designated to offer
programs leading towards a career and technical (vocational) credential.
Candidates for teacher licensure are skilled in a teaching concentration
and proficient in educational methodology. These students take their
professional education course work concurrently while completing
their subject matter courses. Candidates may complete licensure while
enrolled in an undergraduate program or after completing a bachelor's
degree at an accredited university.

Endorsements available through the program include:

<table>
<thead>
<tr>
<th>Endorsement</th>
<th>Levels</th>
<th>U</th>
<th>P</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Education</td>
<td>Secondary</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Art</td>
<td>K-12</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Business Education</td>
<td>Secondary</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Early Childhood Education</td>
<td>Ages 0-8</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>English/ Language Arts</td>
<td>Secondary</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Family and Consumer Sciences</td>
<td>Secondary</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Foreign Language (French, German, Spanish)</td>
<td>K-12</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Instructional Technology</td>
<td>K-12</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<td>Secondary</td>
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<td>X</td>
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<td>Speech</td>
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<td>X</td>
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<tr>
<td>Technology Education</td>
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</table>

Special Services/Administrative Endorsements

<table>
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<th>Levels</th>
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<th>P</th>
<th>G</th>
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<tbody>
<tr>
<td>Occupational Therapist</td>
<td>Ages 0-21</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>School Counselor</td>
<td>Ages 0-21</td>
<td></td>
<td></td>
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</tbody>
</table>

(Pursued at indicated level(s). G = graduate; P = post-baccalaureate; U = undergraduate)

**Approved Majors for Teacher Endorsements**

At CSU, the following are the approved majors for each endorsement
area. Undergraduate teacher licensure candidates must be majoring in
one of the approved majors that align with their endorsement area for
admission to the teacher preparation program.

For detailed four-year curriculum on the degrees listed below, refer to the
specific program in this catalog.

<table>
<thead>
<tr>
<th>Endorsement</th>
<th>Approved Major for Licensure</th>
<th>CollegeProgram Link</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Education</td>
<td>Agricultural Education (B.S.)</td>
<td>Agricultural Major in Agricultural Education, Teacher Development Concentration agricultural-resource-economics/education-major/#text</td>
<td></td>
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<tr>
<td>Art</td>
<td>Art (B.A.)</td>
<td>Liberal Major in Art, Art Education Concentration liberal-arts/art-history/ba-art-education-concentration/</td>
<td></td>
</tr>
<tr>
<td>Early Childhood Education</td>
<td>Human Development and Family Studies (B.S.)</td>
<td>Health Major in Early Childhood Human Education Sciences human-development-family-studies/early-childhood-education-major/#text</td>
<td></td>
</tr>
</tbody>
</table>
Admission to Teacher Licensure

Students who wish to pursue an endorsement program should apply for admission to the Teacher Preparation Program in the Center for Educator Preparation. Formal admission to the Teacher Preparation Program is based upon completion of a minimum of 30 semester credits and successful completion of the following:
• Submission of written application
• Submission of reference forms
• Field experience documentation (20 hour form)
• 2.75 cumulative GPA; 3.00 GPA for admission to the social studies endorsement
• Evidence of oral English proficiency
• Background check (fingerprinting using CDE forms/process)
• Successful completion of Phase I education courses
• Verification of lawful presence

(Note: Admission requirements are subject to change based on program and state licensing requirements and laws.)

Detailed information about the admission process and specific deadline dates for admission are available in the Center for Educator Preparation (http://www.cep.chhs.colostate.edu) Advising Center, Education Building, Room 111.

Student Teaching
Teacher licensure candidates apply for student teaching placement one semester before student teaching. Candidates must pass the state teacher's exam in their respective teaching area by mid-April or mid-October before the student teaching experience. Additionally, candidates must demonstrate acceptable professional, personal, and academic fitness. Student teaching must be completed at an approved school. Placement is contingent upon acceptance of the student by a school system. All assignments are made by CSU. The experience is full time for the specific time period.

Requirements for Licensure
Colorado licensure requires completion of an approved program and the recommendation of the institution at which the program was completed. The Co-Chairs and Student Teaching Coordinator in the Center for Educator Preparation serve as the licensure officers for CSU. Additional requirements of the Colorado Department of Education and the Colorado Department of Higher Education include the successful completion of the state teacher’s exam. Successful completion of the approved teacher preparation program at CSU does not guarantee successful completion of the teacher’s exam. The Center for Educator Preparation does not assume responsibility for the successful completion of the teacher’s exam.

CSU’s approved program requirements include completion of a baccalaureate degree, completion of course work in general education, content area, and professional education, and fulfillment meeting the Colorado Performance Based Standards for teachers at the proficient or advanced proficient level. Additionally, all grades in professional education and content courses must be a C or better for licensing. The minimum scholastic average acceptable for completion of the Teacher Preparation Program and recommendation for licensing is 2.75 computed for all course work, except for social studies where a 3.00 GPA is required.

CSU reserves the right to not recommend a student for licensure on the basis of unacceptable professional, personal, and academic fitness/ performance.

Professional Education Coursework for Licensure
The professional education requirements listed below apply to all teaching endorsement areas except early childhood education where EDUC 400, EDUC 425, and EDUC 426 are required in place of EDUC 350, EDUC 386, EDUC 450, and EDUC 486E. Additional courses may be required by specific endorsement areas. For clarification, refer to individual coursework check sheets which can be obtained in the Education Building, Room 111, and online (http://www.cep.chhs.colostate.edu).

Candidates in all endorsement areas must complete appropriate methods courses the semester prior to enrolling in student teaching.

Career and Technical Education
Individuals desiring to teach in or administer career and technical programs in the state of Colorado must qualify for a credential in addition to a teaching license. Those who plan to qualify as career and technical education (CTE) teachers or directors must meet the requirements for a CTE credential established by the Community Colleges of Colorado and the Colorado Department of Education. Credentialing questions may be directed to the Department of Education, (303) 866-6628.

Professional Education Course Requirements
The professional education course requirements listed under Professional Education Coursework for Licensure apply to all teaching endorsement areas in career and technical education.

Agricultural Education
Kellie Enns, Ph.D., Program Chair
Candidates studying Agricultural Education are prepared to teach youth and adults in high schools, community colleges, junior colleges, area career and technical schools, and technical institutes. Two thousand hours in the agriculture industry are required in addition to completion of the agriculture curriculum and professional education courses.

For the detailed four-year curriculum, refer to the College of Agricultural Sciences, Department of Agricultural and Resource Economics, major in Agricultural Education, or contact the Center for Educator Preparation Advising Center in the Education Building, Room 111.

Family and Consumer Sciences
Dawn Mallette, Ph.D., Program Chair
Candidates majoring in Family and Consumer Sciences with a concentration in Family and Consumer Sciences Education are prepared to be employed as teachers in middle schools, junior or senior high schools, community and junior colleges, area career and technical schools, and technical institutes.

For the detailed four-year curriculum, refer to the interdepartmental major in Family and Consumer Sciences, Family and Consumer Sciences Education concentration, under the School of Education.

Technology Education
Michael A. De Miranda, Ph.D., Program Chair
The B.S. degree program in Engineering Science with an Engineering Education concentration provides students with opportunities to enter junior and senior high school laboratories to teach engineering design principles and concepts in an exciting engineering and technology education classroom. The program consists of a balanced mix of mathematics, science, and engineering courses with additional professional education courses in the Center for Educator Preparation leading to a B.S. degree in Engineering Science and teacher licensure in Technology Education (Engineering). For details see http://www.engr.colostate.edu/students/future-students/teachengineering/index.php

For the detailed degree and licensure curriculum, refer to the major in Engineering Science, Teacher Education concentration, in the College of Engineering.

Undergraduate Majors
- Major in Family and Consumer Sciences
- Family and Consumer Sciences Concentration
- Family and Consumer Sciences Education Concentration

Graduate Programs
Office in Education Building, Room 212
(970) 491-6317
soe.chhs.colostate.edu (http://soe.chhs.colostate.edu)

The School of Education offers graduate programs leading to a Master of Education in Education and Human Resource Studies, a Master of Science in Student Affairs in Higher Education, and a Doctor of Philosophy degree in Education and Human Resource Studies.

Master of Education specializations are available in Adult Education and Training; Counseling and Career Development which is approved by the Council for Accreditation of Counseling and Related Educational Programs; Education Sciences; and Organizational Learning, Performance and Change.

The Master of Science degree in Student Affairs in Higher Education follows the Council for the Advancement of Standards in higher education.

Doctoral degree specializations are available in Education Sciences; Higher Education Leadership; Organizational Learning, Performance and Change; and School Leadership.

Regional Graduate Program status has been given to the doctoral degree by the Western Interstate Commission on Higher Education (WICHE). This arrangement, approved by the State of Colorado, permits citizens of other states to pay resident tuition rates under certain conditions. Contact the School of Education for further details.

Non-degree programs are also available that lead to licensure/credential/endorsement as a school principal.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the School of Education. (http://soe.chhs.colostate.edu)

The Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) is the office at CSU responsible for licensure of K-12 teachers in 15 content areas, and of public school principals, K-12.

Master Programs
- Master of Science in Student Affairs in Higher Education
- Master of Education, Plan A, Adult Education and Training Specialization
- Master of Education, Plan B, Adult Education and Training Specialization
- Master of Education in Education and Human Resources Studies, Counseling and Career Development Specialization
- Master of Education and Human Resource Studies, Education Sciences Specialization
- Master of Education in Education and Human Resource Studies, Organizational Learning, Performance and Change Specialization

Ph.D.
- Ph.D. in Education and Human Resource Studies, Education Sciences Specialization
- Ph.D. in Education and Human Resource Studies, School Leadership Specialization
- Ph.D. in Education and Human Resource Studies, Higher Education Leadership Specialization, College and University Leadership Option
- Ph.D. in Education and Human Resource Studies, Higher Education Leadership Specialization, Community College Leadership Option
- Ph.D. in Education and Human Resource Studies, Organizational Learning, Performance, and Change Specialization

Courses
Subjects in this department include: Education - Adult (ADAE), Education - Community College (EDCL), Education - Counseling and Career Development (EDCO), Education - Career and Teaching (EDCT), Education - General (EDUC), Education - Higher Education (EDHE), Education - Organizational Performance and Change (EDOD), and Education - Research Methods (EDRM).

Education - Adult (ADAE)
EDAE 495 Independent Study-Adult Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDAE 520 Adult Education Credits: 3 (0-0-3)
Course Description: Philosophical foundations, a description of program service areas, adult participation trends, and current issues.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDAE 530 Adult Basic Education Credits: 3 (2-0-1)
Course Description: Enhance instructor skills in literacy and numeracy instruction for adult learners functioning below the 12th grade equivalency.
Prerequisite: None.
Registration Information: Bachelor’s degree or consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 540 Teach English as Second Lang—Adult Learners Credits: 3 (2-0-1)
Course Description: Instructors learn the tools necessary to successfully deliver English learning to adult speakers of other languages.
Prerequisite: None.
Registration Information: Bachelor’s degree or consent of instructor. Offered only online
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 586 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Participation in field experience relevant to study program and objectives.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description: Specially designed learning situations to provide opportunities for concentrated problem-solving experiences.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 601 Philosophy/Organization of Workforce Education Credits: 3 (3-0-0)
Course Description: Principles, philosophy, practices, and innovations of workforce education and human resources.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 620 Processes and Methods Credits: 3 (0-0-3)
Course Description: Processes and methods including helping theories used by adult learning facilitators.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 624 Adult Teaching and Learning I Credits: 3 (0-0-3)
Course Description: Using theory and best practices to design and deliver instruction for adults.
Prerequisite: EDAE 520.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 629 Program Development Credits: 3 (0-0-3)
Course Description: Models for planning, implementing, and evaluating programs for adult learners.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 639 Instructional Design Credits: 3 (1-0-2)
Course Description: Apply instructional design principles in the development of a course or workshop and explore application of various learning methods.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 651 Assessment and Evaluation in Adult Education Credits: 3 (2-0-1)
Course Description: Assessment of learning, evaluation of learning events, and determining the value of the training to the adult learners in the organization.
Prerequisite: EDAE 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 664 Cognitive Theory and Learning Transfer Credits: 3 (1-0-2)
Course Description: Investigation of learning processes and training strategies that lead to application of learning outside of the classroom.
Prerequisite: EDAE 620 or EDAE 624.
Restriction: Must be a: Graduate, Professional.
Registration Information: EDAE 620; EDAE 624 or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDAE 682 Cultural Applications of Lifelong Learning Credits: 3 (0-0-3)
Course Description: Immersion experience examining cultural differences and establishing lifelong learning practices in Belize.
Prerequisite: EDUC 651.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed 6 credits in the Adult Education and Training specialization under the M.Ed.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDAE 687 Internship Credits: Var[1-18] (0-0-0)
Course Description: Career or job fieldwork experience with an adult education institution, agency, or program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 692 Seminar-Adult Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDAE 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: EDAE 520 and EDAE 624 and EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCL 675 The Community College Credits: 3 (3-0-0)
Course Description: Role and scope of community college: history, philosophy, organization, administration.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDCL 702.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 675 Community College Curriculum Credits: 3 (2-0-1)
Course Description: Investigation and research of critical curricular issues affecting the community college now and in the future.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 675 Simulated Presidential Cabinet I Credits: 3 (0-0-3)
Course Description: Issues and challenges relating to students, faculty, instructional programs, noninstructional programs, and instructional delivery.
Prerequisite: EDCL 701 and EDUC 710.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 675 Simulated Presidential Cabinet II Credits: 3 (0-0-3)
Course Description: Issues and challenges relating to internal/external governances, legal authority, institutional revenues, expenditures and insurances, human resources.
Prerequisite: EDCL 701 and EDUC 710.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDCL 792 Seminar Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - Counseling/Career Development (EDCO)

EDCO 500 Career and Employment Concepts Credits: 3 (0-0-3)
Course Description: Career and lifestyle studies that provide an understanding of career development, employment concepts, and career counseling resources.
Prerequisite: None.
Registration Information: Bachelor's degree. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 550 Professional School Counseling Credits: 3 (3-0-0)
Course Description: History, professionalism, ethics, program planning and program development of school counseling programs.
Prerequisite: None.
Registration Information: Admission to Counseling and Career Development Program or approval of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 552 School Counseling Program Delivery/Evaluation Credits: 3 (0-0-3)
Course Description: Effective school counseling program development, delivery, and evaluation.
Prerequisite: EDCO 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 625 Foundations of Counseling Credits: 3 (2-0-1)
Course Description: Foundations and techniques of individual guidance and counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 650 Individual Guidance and Counseling Credits: 3 (2-0-1)
Course Description: Theories of individual counseling and development.
Prerequisite: EDCO 625.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 651 Group Guidance and Counseling Credits: 3 (2-0-1)
Course Description: Theory and techniques of group guidance and counseling.
Prerequisite: EDCO 650.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 652 Ethics in Counseling/Career Development Credits: 3 (3-0-0)
Course Description: Awareness and critical analysis of ethical and legal issues in counseling and career development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 653 Counseling for Cultural Diversity Credits: 3 (2-0-1)
Course Description: Influence of cultural differences in delivering culturally responsive counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.Ed. Counseling and Career Development specialization or written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 656 Tests and Assessment Credits: 3 (1-0-2)
Course Description: Use of tests in educational, vocational, and counseling assessment.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

EDCO 660 Career Development Counseling Credits: 3 (3-0-0)
Course Description: Career development programs and processes over the life span with particular attention to career choice.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDCO 662  Counseling Children and Adolescents  Credits: 3 (2-0-1)
Course Description: Counseling theories and interventions applied to the child and adolescent client population.
Prerequisite: None.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 686  Practicum-Guidance and Counseling  Credits: Var[1-18] (0-0-0)
Course Description: Blends theory of brief counseling with practice. Individualized for application in the student's counseling setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792B  Seminar: Group Counseling  Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 792C  Seminar: Contemplative Practices in Counseling and Education  Credits: 3 (0-0-3)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - Career and Teaching (EDCT)

EDCT 300  Principles of Career and Technical Education  Credits: 2 (0-0-2)
Course Description: History, purpose, administration, funding, programs, services and delivery of career and technical education within educational systems.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 370  Laboratory Management, Safety, and Liability  Credits: 3 (3-0-0)
Course Description: Organization and management of learning laboratories. Approved principles and practices of classroom and laboratory safety including impact of accidents.
Prerequisite: None.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 387  Internship  Credits: Var[1-18] (0-0-0)
Course Description: Coordinated and supervised experiences in business, industry, or agriculture selected to strengthen the intern's specialty through experience.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 400  Building Student Organizations/Partnerships  Credits: 2 (2-0-0)
Course Description: Techniques and methods to implement and advise student leaders; establish and nurture business/industry partners and work-based experiences.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 403 Coordination Techniques of Cooperative Programs Credits: 2 (0-0-2)
Course Description: Techniques and methods employed in organization, development, and maintenance of a cooperative program.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 420 Agricultural Experience and Adult Education Credits: 3 (3-0-0)
Course Description: Developing secondary agriculture experience programs. Organizing and teaching adult education classes in agriculture.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 425 Methods/Materials in Agricultural Education Credits: 4 (4-0-0)
Course Description: Methods and procedures in teaching and evaluating agricultural education in the classroom and laboratory; vocational foundations; microteaching.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 431 Methods/Materials in Business Education Credits: 4 (4-0-0)
Course Description: Methods for teaching business education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 441 Methods/Materials-Vocational Marketing Education Credit: 1 (1-0-0)
Course Description: Instructional methods and resource materials development for vocational marketing education.
Prerequisite: (EDCT 431) and (EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 451 Methods-Family/Consumer Sciences Education Credits: 4 (3-2-0)
Course Description: Teaching methods, processes, and materials for family and consumer sciences education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 465 Methods and Materials in Technology Education Credits: 3 (3-0-0)
Course Description: Strategies and practices of teaching in a technical laboratory setting.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 471 Orientation and Assessment of New Teachers Credits: 2 (2-0-0)
Course Description: Orientation to teaching and individual assessment of teaching skills: development and implementation of professional growth plan.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 473 Communication Strategies Credit: 1 (0-0-1)
Course Description: Introduction to student management techniques and program management. Teachers will create a preliminary plan for instruction.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 474 Communication Strategies Credit: 1 (0-0-1)
Course Description: Introduction to student management techniques and program management. Teachers will create a preliminary plan for instruction.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 485 Student Teaching Credits: Var[1-18] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDUC 425 or EDUC 431 or EDUC 441 or EDUC 451 or EDUC 465 or EDUC 462).
Registration Information: Appropriate special content methods courses.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDCT 486 Practicum Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDCT 492 Seminar-Professional Relations Credits: Var[1-18] (0-0-0)
Course Description: Collegial and professional discussions, support, and assistance.
Prerequisite: EDUC 450.
Registration Information: Appropriate special content methods course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
EDCT 494 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDCT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDCT 520 Teaching Agricultural Education Credits: Var[1-18] (0-0-0)
Course Description: Methods of teaching recent developments in the field of agriculture and allied industries.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 571 Vocational Assessment for Special Needs Credits: 3 (0-0-3)
Course Description: Information on techniques regarding vocational assessment of special needs students including traditional and curriculum-based strategies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDCT 612 Career and Technical Administrative Strategy Credits: 3 (0-0-3)
Course Description: Basic educational systems; the scientific method as a basis for analysis; systems as a tool for planning and decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 630 Organization of Business Education Credits: 2 (2-0-0)
Course Description: Procedures for organizing new programs and for managing or modifying existing programs.
Prerequisite: EDCT 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 631 Management of Business Departments Credits: 2 (2-0-0)
Course Description: Preparation of teachers and administrators for implementation of vocational business and office education programs.
Prerequisite: EDCT 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 640 Methods in Marketing Education Credits: 2 (2-0-0)
Course Description: Instruction and curricula for secondary and postsecondary vocational marketing education.
Prerequisite: EDCT 441.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 641 Programs in Marketing Education Credits: 2 (2-0-0)
Course Description: Techniques used in determining need for and implementations of new or additional programs of vocational marketing education.
Prerequisite: EDCT 441.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 693 Seminar Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - General (EDUC)
EDUC 255 Introduction to Education Credits: 2 (2-0-0)
Course Description: Overview of teaching profession emphasizing teaching opportunities, licensure, and University professional program.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 275 Schooling in the United States (GT-SS3) Credits: 3 (3-0-0)
Course Description: Social, political, historical, and economic forces that shape U.S. system of public schooling (P-12).
Prerequisite: None.
Registration Information: 30 credits of course work completed. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

EDUC 296 Group Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 320 Educational Psychology Credits: 3 (0-0-3)
Course Description: Psychological conditions of classroom learning and teaching including understanding needs of exceptional children in the classroom.
Prerequisite: None.
Registration Information: Offered as an online or correspondence course only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 331 Educational Technology and Assessment Credits: 2 (1-2-0)
Course Description: Skills and strategies for the use of appropriate technology and assessment in teacher education.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 340 Literacy and the Learner Credits: 3 (1-2-1)
Course Description: Understanding and supporting literacy and numeracy development. Field experiences, service learning experiences.
Prerequisite: None.
Registration Information: Required background check through CDE, CBI, FBI. 30 credits of course work completed. Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 350 Instruction I-Individualization/Management Credits: 3 (2-2-0)
Course Description: Theory, research and practice of teaching at the junior high/middle school level; adapting instruction for individuals including learners with special needs.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 386. Admission to Teacher Licensure Program. Must register for lecture and laboratory. Includes fieldwork in public schools. Site placement may change due to public school needs.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 386 Practicum-Instruction I Credits: Var[1-3] (0-0-0)
Course Description: None.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 350. Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 400 Diagnostic Teaching of Reading Credits: 3 (1-4-0)
Course Description: Development of the knowledge base, skills, and strategies for teaching reading from birth to age 8. Service learning experiences.
Prerequisite: EDUC 275 and EDUC 340 and HDFS 217 and HDFS 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 425 Early Childhood Education I Credits: 4 (2-6-0)
Course Description: Integrated methods; theoretical bases; teacher's role; appropriate curriculum; measurement; environments; pedagogy; instructional design and decisions.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 426 Early Childhood Education II Credits: 4 (2-4-0)
Course Description: Integrated methods; organizing/presenting materials/activities; applying decisions; managing groups; individual instruction; assessment/evaluation.
Prerequisite: EDUC 425.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 450 Instruction II-Standards and Assessment Credits: 4 (2-4-0)
Course Description: Theory, research, and practice of standards-based instruction: assessment, literacy, and technology. Includes work in public schools.
Prerequisite: EDUC 350 and EDUC 386 and EDUC 331.
Registration Information: Must have concurrent registration in EDUC 486E. Must register for lecture and laboratory. Course must be taken semester immediately prior to student teaching semester.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 460 Methods and Materials in Teaching Science Credits: 4 (3-2-0)
Course Description: Current trends in science education, K-12; techniques of experimentation demonstrations; study of equipment, facilities, and resource materials.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 462 Methods and Assessment in Teaching Languages Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching languages in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; oral and written competency in language endorsement area.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
EDUC 463 Methods in Teaching Language Arts Credits: 4 (4-0-0)
Course Description: Objectives, content, and methods of teaching English, speech, and journalism in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 464 Methods and Materials in Teaching Mathematics Credits: 4 (4-0-0)
Course Description: Problems and techniques of teaching secondary mathematics; evaluation of student achievement and teacher effectiveness.
Prerequisite: MATH 100 to 481 - at least 18 credits.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 465 Methods and Materials in Social Studies Credits: 4 (4-0-0)
Course Description: Methods of teaching social studies; sources of information and teaching materials and literature for social studies teachers.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 466 Methods and Assessment in K-12 Art Education Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching art in elementary and secondary schools.
Prerequisite: EDUC 275.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 474 Elementary Music Methods I Credits: 2 (1-3-0)
Course Description: Developmentally appropriate strategies and materials for K-6 music instruction; emphasis on common methodologies, resources, standards-based teaching.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 475 Elementary Music Methods II Credits: 2 (1-3-0)
Course Description: Classroom management, motivational strategies, technology tools, assessment/evaluation of music learning and field experiences in K-6 music education.
Prerequisite: EDUC 474.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
EDUC 476 Choral Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: General music classes, choral techniques and literature; current practices and trends.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
EDUC 477 Instrumental Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: Organization and administration of instrumental music, grades 5-12.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
EDUC 485A Student Teaching: Elementary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDUC 485B Student Teaching: Secondary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
EDUC 485C  Student Teaching: Early Childhood  Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486A  Practicum: K-12 Classroom  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486B  Practicum: Reading  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486C  Practicum: Mathematics  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486D  Practicum: Literacy  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 486E  Practicum: Instruction II  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 493B  Seminar: Assessment of Learning  Credits: Var[1-3] (0-0-0)
Course Description: Information and techniques that enable educators to use assessment results to inform planning and instructional practices.
Prerequisite: (EDUC 426 or EDUC 450) and (EDUC 485B, may be taken concurrently or EDUC 485C, may be taken concurrently or EDCT 485, may be taken concurrently or EDUC 485A, may be taken concurrently) and (EDUC 460 or EDUC 462 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 474 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465).
Registration Information: Appropriate special methods course(s).
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 494  Independent Field Studies  Credits: Var[1-18] (0-0-0)
Course Description: Specialized field study in the public schools under direction and supervision of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 501  Reading in the Content Areas  Credits: 3 (3-0-0)
Course Description: Specific methods, materials, and techniques for helping students become more efficient in reading content area material.
Prerequisite: EDUC 320.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 502  Human Relations in Education  Credits: 3 (3-0-0)
Course Description: Human relations in an individual's educational, organizational, and social activities as applied to various educational settings.
Prerequisite: EDCT 300.
Registration Information: Bachelor's degree can substitute for EDCT 300. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 525A  Expert Teaching: Inclusion/Special Needs  Credits: 2 (0-0-2)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 525B Expert Teaching: Thinking and Learning Credits: 2 (0-0-2)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 525C Expert Teaching: Literacy and Numeracy Credits: 3 (0-0-3)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 526 Interdisciplinary Methods Credits: 4 (0-4-2)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 530 Technology Enhanced Learning Credits: 3 (2-2-0)
Course Description: Enhancing instruction and learning through the effective use of technology.
Prerequisite: None.
Registration Information: Bachelor's degree. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 570 Perspectives of Special Education Credits: 3 (2-2-0)
Course Description: Historical and legal, philosophical foundations, student characteristics, and building collaborative relationships in special education.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 572 Special Needs-Foundations and Practices Credits: 3 (3-0-0)
Course Description: Theory related to foundations and professional practices relevant for teaching students with mild/moderate special needs.
Prerequisite: None.
Registration Information: Teacher Licensure.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 573 Differentiating Instruction for Diverse Needs Credits: 3 (3-0-0)
Course Description: Information techniques, and practice regarding methods for differentiating instruction.
Prerequisite: EDUC 570.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 574 Transition and Secondary Services Credits: 3 (3-0-0)
Course Description: Methods comprising state-of-the-art transition services for individuals with disabilities for the special education generalist.
Prerequisite: EDUC 570.
Registration Information: Teacher Licensure.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 575 Methods for Mild/Moderate Special Needs Credits: 4 (4-0-0)
Course Description: Methods addressing learning of students with mild/moderate special needs and instructional accommodations in regular classes.
Prerequisite: EDUC 572.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576A Issues in Education: Talented and Gifted Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576B Issues in Educ: Attention Deficit Disorder Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576C Issues in Education: Autism/Asperger's Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Colorado State University
EDUC 576D  Issues in Education: Behavior is Language  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576E  Issues in Education: Classroom Management  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576F  Issues in Education: Teaching Diversity  Credit: 1 (0-0-1)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576G  Issues in Education: Harassment in Schools  Credit: 1 (0-0-1)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576H  Issues in Education: Assessing Special Needs  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576I  Issues in Educ: Sexually Transmitted Diseases  Credit: 1 (0-0-1)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576J  Issues in Education: Drugs and Alcohol  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576K  Issues in Education: Child Abuse  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576L  Issues in Education: Traumatized Child  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor’s degree. Offered as on online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 591A  Workshop: Instruction  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 591B  Workshop: Community Partnerships  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 618  School Law  Credits: 3 (3-0-0)
Course Description: Legal framework for operation and management of public and private schools emphasizing legal responsibilities for administrators and teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 619  Curriculum Development  Credits: 3 (3-0-0)
Course Description: Principles and procedures for school personnel in planning the public school curriculum.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program required.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 485A or EDUC 485B.

EDUC 591C  Workshop: Annenberg/CPB Science Instruction  Credits: Var[1-3] (0-0-0)
Course Description: Science pedagogy for practicing K-12 teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591D  Workshop: Annenberg/CPB Mathematics Instruction  Credits: Var[1-3] (0-0-0)
Course Description: Mathematics pedagogy for practicing K-12 teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591E  Workshop: Annenberg/CPB Educ Theory and Issues  Credits: Var[1-3] (0-0-0)
Course Description: General educational theory and current issues for practicing K-12 teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
EDUC 629 Communication and Classrooms Credits: 3 (3-0-0)
Course Description: Exploration of pedagogical topics and growth experiences related to classroom management and presentation skills.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 635 Educators, Systems and Change Credits: 3 (3-0-0)
Course Description: Process of change in education, focusing on teacher's role as leader and facilitator.
Prerequisite: EDUC 485A or EDUC 485B.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 645 Leadership and Ethics in Public Education Credits: 3 (3-0-0)
Course Description: Focus on leadership functions for public schools and ethical dimensions of leadership.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 646 School Resource Management Credits: 3 (3-0-0)
Course Description: School resource management including fiscal, personnel, and organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 647 School Culture, Climate, and Communications Credits: 3 (3-0-0)
Course Description: Assist public school leaders in their facilitation role in enhancing human relations and communication within schools and communities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 645 and EDUC 646. Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648A Role of the Principal: Professional Learning Community Credit: 1 (1-0-0)
Course Description: Role of the principal as a result of changes in society and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 687B. Admission to Administrator Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648B Role of the Principal: Managing and Leading Change Credits: 2 (1-0-1)
Course Description: Role of the principal as a result of changes in society and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Must have concurrent registration in EDUC 687B. Admission to Administrator Licensure Program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 651 Multicultural and Social POPulations Credits: 3 (2-0-1)
Course Description: Special concerns for working with people of various cultural, ethnic, exceptional, and special interest groups.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 660 Advanced Methods-Science and Math Instruction Credits: 3 (0-0-3)
Course Description: Knowledge and skills to improve the teaching of science, technology, engineering, and mathematics for in service K-12 teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 670 Grant Writing Credits: 3 (0-0-3)
Course Description: Mechanics of proposal writing, including intangibles of the grant-seeker's art.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 675 Analyzing Education Literature Credits: 3 (1-0-2)
Course Description: Analyze, critique, and interpret scholarly literature in the discipline.
Prerequisite: EDRM 700 or EDRM 702 or EDRM 704.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
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<tr>
<td>EDUC 686A</td>
<td>Practicum: Administration</td>
<td>Var[1-6] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 686B</td>
<td>Practicum: Urban Teaching</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 687A</td>
<td>Internship: Administration</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 687B</td>
<td>Internship: Principal</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 687C</td>
<td>Internship: Guidance and Counseling</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 687D</td>
<td>Internship: Teacher Licensure I</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Traditional.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 687E</td>
<td>Internship: Teacher Licensure II</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Traditional.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 693A</td>
<td>Seminar: Administrator</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 693B</td>
<td>Seminar: Instruction</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 693C</td>
<td>Seminar: Teacher Licensure Capstone</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Traditional.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 695</td>
<td>Independent Study</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
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<tr>
<td>EDUC 696</td>
<td>Group Study</td>
<td>Var[1-18] (0-0-0)</td>
<td>Course Description:</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Instructor Option.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 709</td>
<td>Leadership Development</td>
<td>3 (3-0-0)</td>
<td>Course Description: Principles, theories, attributes, and skills related to individual leadership development.</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Traditional.</td>
<td>No</td>
</tr>
<tr>
<td>EDUC 710</td>
<td>Higher Education Finance</td>
<td>3 (0-0-3)</td>
<td>Course Description: Federal, state, and local revenue distribution, budget preparation and controls, accounting options, audit preparation.</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer.</td>
<td>Online.</td>
<td>No</td>
</tr>
</tbody>
</table>
EDUC 713 Teaching, Learning, and Professional Growth Credits: 3 (3-0-0)
Course Description: Teaching, learning, and professional development perspectives related to educational change and reform.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 714 Education Policy Analysis Credits: 3 (3-0-0)
Course Description: Frameworks for analyzing, designing policy proposals, and implementing plans.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Term Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 715 Critical Issues for Special Populations Credits: 3 (3-0-0)
Course Description: Social and cultural issues related to special populations are researched and analyzed to understand policy that guides educational decisions.
Prerequisite: EDUC 709 and EDUC 713.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 716 Capstone: Educational Equity and Reform Credits: 3 (3-0-0)
Course Description: Applies tenets of educational leadership research and theory into a context of equity, global citizenship and environmental responsibility.
Prerequisite: EDUC 709 and EDUC 713.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 720 Human Learning, Cognition, and Motivation Credits: 3 (3-0-0)
Course Description: Theories of learning, cognition, and motivation applicable to enhancing effective and efficient learning for individuals and teams.
Prerequisite: EDUC 628 or EDUC 629.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 725 Professionalism in Education and Leadership Credits: 3 (3-0-0)
Course Description: Professional choices and ethical decision making in education and leadership, with emphasis on higher education.
Prerequisite: None.
Registration Information: Admission to Ph.D. program.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 792 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 793 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590A Workshop: Student Personnel-Admissions Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590B Workshop: Student Personnel-College Union Administration Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDHE 590C Workshop: Student Personnel-Housing/Auxiliary Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590D Workshop: Student Personnel-International Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590E Workshop: Student Personnel-Career Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590F Workshop: Student Personnel-Service Learning Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590G Workshop: Student Personnel-Wellness Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590H Workshop: Advising Student Groups Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590J Workshop: Student Personnel-Access and Opportunity in Higher Education Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590K Workshop: Student Personnel-Leadership and Service in Higher Education Credit: 1 (0-0-1)
Course Description: Various theories of leadership and citizenship development applied to different higher education and student affairs settings.
Prerequisite: None.
Registration Information: enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590L Workshop: Student Personnel-Working with Students Parents and Families Credit: 1 (0-0-1)
Course Description: Philosophies and best practices regarding partnering with the parents and families of today’s college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590M Workshop: Student Personnel-Spiritual Dimensions of Student Development Credit: 1 (0-0-1)
Course Description: Intersection of faith and spirituality and the learning, growth, and development of college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 650 College Opportunity Program Models Credits: 3 (2-0-1)
Course Description: Examines rationale and structure of postsecondary retention programs that support underrepresented students based on college type and program purpose.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree or consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 651 Pre-College Program Models Credits: 3 (2-0-1)
Course Description: Rationale and structure of pre-college programs that support underrepresented students’ successful enrollment into higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree required. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDHE 653  Precollege Access Programs  Credits: 3 (3-0-0)
Course Description: Precollege access programs effective practices to support underrepresented middle-high school students to prepare for and enroll in postsecondary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program; written consent of instructor. Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 660  Financial Management in Student Affairs  Credits: 2 (1-0-1)
Course Description: Budgeting, fiscal planning, and financial administration in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE Program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 661  Inclusive University  Credits: 3 (3-0-0)
Course Description: Exploration of broad range of human differences and their impact in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE Program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 662  Trends/Issues/Assessment in Higher Education  Credits: 2 (2-0-0)
Course Description: Assessment and research involving students in collegiate settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 670  College Student Personnel Administration  Credits: 3 (0-0-3)
Course Description: Historical, philosophical, and professional development in student affairs functions; analysis of role of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program; written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 663  Precollege Access Programs  Credits: 3 (3-0-0)
Course Description: Precollege access programs effective practices to support underrepresented middle-high school students to prepare for and enroll in postsecondary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree or written consent of instructor. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 666  TRENDS/ISSUES/ASSESSMENT IN HIGHER EDUCATION  Credits: 2 (1-0-1)
Course Description: Budgeting, fiscal planning, and financial administration in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 660  Financial Management in Student Affairs  Credits: 2 (1-0-1)
Course Description: Budgeting, fiscal planning, and financial administration in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE Program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 661  Inclusive University  Credits: 3 (3-0-0)
Course Description: Exploration of broad range of human differences and their impact in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE Program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 662  Trends/Issues/Assessment in Higher Education  Credits: 2 (2-0-0)
Course Description: Assessment and research involving students in collegiate settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 676  Ethical and Practical Issues-Student Affairs  Credits: 2 (2-0-0)
Course Description: Ethical principles and standards used in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE Program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 671  Higher Education Administration  Credits: 3 (3-0-0)
Course Description: History, purpose, structure, and role of leadership within the administration of higher education with relevance to present day higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 675  Campus Crisis Management  Credits: 3 (3-0-0)
Course Description: Crisis management on college campuses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 676  Organizational Behavior in Student Affairs  Credits: 3 (3-0-0)
Course Description: Understanding and application of basic organizational behavior principles within administration of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDHE 677 Law in Student Affairs Credits: 3 (3-0-0)
Course Description: Legal issues focusing on sources and application of educational law and responsibilities of higher education administrators.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 678 Capstone in Student Affairs Credits: 2 (2-0-0)
Course Description: Capstone analyzing current issues and leadership in transition to professional roles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 692A Seminar: Current Trends and Issues Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692B Seminar: Working with Student Groups Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692C Seminar: Service Learning Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692D Seminar: International Programs Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 694 Independent Field Studies Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education - Organizational Performance and Change (EDOD)

EDOD 506 Human Resource Development Credits: 3 (3-0-0)
Course Description: Human resource development foundational theory, research, and techniques for workplace and organizational learning and performance.
Prerequisite: None.
Registration Information: Admission to Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 667 Power-Politics-Influence in Organizations Credits: 3 (3-0-0)
Course Description: Creation and execution of power relationships, political engagements, and communications in organizations.
Prerequisite: EDOD 506.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 677 Power-Politics-Influence in Organizations Credits: 3 (3-0-0)
Course Description: Creation and execution of power relationships, political engagements, and communications in organizations.
Prerequisite: EDOD 506.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 679 Strategic Human Resource Development Credits: 3 (3-0-0)
Course Description: Examine fundamentals of strategy from a HRD perspective, utilizing management tools, recent research and contemporary theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDOD 671  Establish Relations, Diagnose Organizations  Credits: 3 (3-0-0)
Course Description: Build relationships with clients and examine current practices to diagnose organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance, and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 672  Change Facilitation  Credits: 3 (3-0-0)
Course Description: Roles and responsibilities of change agents and the fundamentals of change: principles, practices, processes, and resistance strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 673  Plan and Implement Change Interventions  Credits: 3 (3-0-0)
Course Description: Plan strategies and facilitate change interventions to improve organizational learning and performance.
Prerequisite: EDOD 677, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 674  Analyze Workplace Learning  Credits: 3 (3-0-0)
Course Description: Analyze workplace learning and performance issues drawing on foundational principles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 675  Design, Develop, Implement Workplace Learning  Credits: 3 (3-0-0)
Course Description: Design, develop, and implement workplace learning and performance interventions drawing on foundational principles.
Prerequisite: EDOD 674.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 676  Evaluate Workplace Learning  Credits: 3 (3-0-0)
Course Description: Evaluate workplace learning and performance interventions drawing on foundational principles. Examine satisfaction, learning, and performance results.
Prerequisite: EDOD 675, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 677  Action Learning and Inquiry  Credits: 3 (3-0-0)
Course Description: Literature reviews and data collection methods as the basis for diagnosing organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 678  Assess Change Interventions  Credits: 3 (3-0-0)
Course Description: Assess and institutionalize change interventions to improve organizational learning and performance.
Prerequisite: EDOD 500 to 799 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: 15 credits of EDOD 500-level or above courses or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 687  Internship  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692A  Seminar: HRD Concepts--Workplace Learning  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692B  Seminar: HRD Concepts--Organizational Learning  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDOD 706 Organizational Learning, Performance, Change Credits: 3 (2-0-1)
Course Description: History, development, and current status of organizational learning, performance and change theory, research and practice (praxis).
Prerequisite: None.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization under the Education and Human Resource Studies Ph.D.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 761 Evaluation and Assessment of Interventions Credits: 3 (2-0-1)
Course Description: Evaluation and assessment of organizational learning, performance, and change (OLPC) interventions.
Prerequisite: EDOD 706 and EDOD 768.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 765 Strategic Planning of Education for Work Credits: 3 (3-0-0)
Course Description: Human capital as component of strategic planning of education; training and development at national, regional, and organizational levels.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 766 Scenario Planning in Organizations Credits: 3 (2-0-1)
Course Description: Theory and practice of scenario planning. Application of scenario planning in organizations.
Prerequisite: EDOD 761 and EDOD 769.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 767 Cross-Culture and International Training Credits: 3 (3-0-0)
Course Description: Issues, models, techniques of development and delivery of human resource development and training programs across cultural, interregional, national barriers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 768 Workforce Development Credits: 3 (3-0-0)
Course Description: Characteristics and elements of workforce development with special attention to the roles and responsibilities of employers and managers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization under the Ph.D. in Education and Human Resource Studies. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 769 Theory and Practice of Change Credits: 3 (3-0-0)
Course Description: Theory, history, characteristics, nature, levels, and types of change and modern conceptual and integrated models of change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 770 Organizational Culture Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for evaluating, analyzing, and changing organizational culture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 771 Social Foundations of the Workplace Credits: 3 (2-0-1)
Course Description: Social, cultural and political systems in organizations and their implications for employees.
Prerequisite: EDOD 761 and EDOD 769.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 772 Theory Building in Applied Disciplines Credits: 3 (2-0-1)
Course Description: Theory building in workplace environments. Develop a theory and examine and critique existing theories.
Prerequisite: EDOD 766 and EDOD 771.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 773 Systems Leadership Credits: 3 (2-0-1)
Course Description: A systems conceptualization and approach to leadership and leadership development.
Prerequisite: EDOD 771 and EDOD 772, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDOD 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 792 Seminar-Human Resource Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: Dissertation research, writing, and defense.
Prerequisite: None.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Education - Research Methods (EDRM)
EDRM 600 Introduction to Research Methods Credits: 3 (3-0-0)
Course Description: Methods of research, scientific methods, problem identification, research design, preparation and evaluation of research reports.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 602 Action Research Credits: 3 (3-0-0)
Course Description: Provide educators with knowledge and skills to plan and implement school-based research to improve teaching and learning.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 606 Principles: Quantitative Data Analysis Credits: 3 (3-0-0)
Course Description: Quantitative data analysis in social science research; descriptive statistics; fundamentals of inference.
Prerequisite: EDRM 600 and STAT 201.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 612 Assessing Students in Educational Settings Credits: 3 (2-0-1)
Course Description: Various ways of assessing students including traditional, authentic, and portfolio techniques for P-20 education.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admissions into a Master’s Program within the School of Education.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 666 Program Evaluation Credits: 3 (3-0-0)
Course Description: Models and practices of program evaluation in both public and private sector organizations.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 692 Seminar-Research Methods/Proposal Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 700 Quantitative Research Methods Credits: 3 (3-0-0)
Course Description: Design, data analysis, interpretation of results, and evaluation of educational research studies.
Prerequisite: EDRM 606, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: EDRM 606 or concurrent registration.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDRM 701  Applied Linear Models-Educational Research  Credits: 3 (3-0-0)
Course Description: General linear model applications in educational research emphasizing conceptual understanding and characteristics of non-experimental designs.
Prerequisite: EDRM 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 702  Foundations of Educational Research  Credits: 3 (3-0-0)
Course Description: Philosophical, theoretical, and ethical foundations of educational research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 703  Applied Longitudinal Data Analysis  Credits: 3 (3-0-0)
Course Description: Methods and empirical applications of individual growth modeling and discrete-time event history analysis in educational research.
Prerequisite: EDRM 701.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 704  Qualitative Research  Credits: 3 (3-0-0)
Course Description: Examination of qualitative research theory, methods, and applications to education and the social sciences.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 705  Qualitative Data Analysis  Credits: 3 (3-0-0)
Course Description: Examination of qualitative methods of data analysis, data presentation, and use of computer.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 706  Analysis of Variance--Education Research  Credits: 3 (3-0-0)
Course Description: Analysis of variance applications in educational research; experimental design and analysis of data from experiments.
Prerequisite: EDRM 700, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 707  Quantitative Data Collection Methods/Analysis  Credits: 3 (0-0-3)
Course Description: Selection or development of questionnaires, tests, structured interviews, and observations. Reliability and validity. Reporting educational studies.
Prerequisite: EDRM 700.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 708  Narrative Inquiry  Credits: 3 (3-0-0)
Course Description: Theory, methods and design of narrative approaches to research including data collection and analysis applications.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 711  Ethnographic Research  Credits: 3 (3-0-0)
Course Description: Theoretical underpinnings, research design, ethics and practical application of ethnographic research in a naturalistic setting.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 786  Practicum  Credits: Var[1-6] (0-0-0)
Course Description: Practical experience in research design and data collection.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDRM 792A  Seminar: Research Methodology  Credits: Var[1-18] (0-0-0)
Course Description: Exploration of research methods and their applications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 792B  Seminar: Proposal Development  Credits: Var[1-18] (0-0-0)
Course Description: Preparation of research proposals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 798  Research  Credits: 18 (0-0-0)
Course Description: Supervised research project.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Family and Consumer Sciences

Family and Consumer Sciences is an exciting field with many career opportunities. The mission of this interdepartmental major prepares professionals dedicated to enhancing the well-being of individuals and families and the communities and environments in which they function.

Students graduate with an interdisciplinary perspective about the challenges encountered by consumers and families. Family and Consumer Sciences students attain skills to assist families and consumers with quality of life decisions and challenges related to interpersonal/human relationships, consumer and financial resource management, personal development, nutrition and wellness, and balancing family and work. This program emphasizes management and problem solving skills needed to be a responsible and productive individual, family member, and worker. Students take course work primarily in Family and Consumer Sciences and in the Departments of Human Development and Family Studies, Food Science and Human Nutrition, and Design and Merchandising.

Students have the option of the Family and Consumer Sciences concentration or the Family and Consumer Sciences Education concentration. Graduates qualify to sit for the examination to be certified in Family and Consumer Sciences (CFCS) with the American Association of Family and Consumer Sciences.

Learning Goals
Students will:

• demonstrate an understanding and comprehension of the family and consumer sciences body of knowledge
• demonstrate, at a professional level, oral and written communication and problem solving proficiency within Family and Consumer Sciences
• demonstrate synthesis and integration of the specialized Family and Consumer Sciences body of knowledge through an engaged learning experience

Potential Occupations
Graduates’ career opportunities include, but are not limited to, cooperative extension/agent, consumer program development, consultant, product representative, consumer information specialist, customer assurance specialist, writer/developer of informational or educational materials, governmental, community, and non-profit agency worker, and Peace Corps volunteer. Teaching opportunities at the middle school, junior high, high school, or post-secondary level are available upon completion of the education concentration.

The major provides a strong foundation for graduate work. Graduate degree opportunities are available in the School of Education or specific departments related to family and consumer sciences (Design and Merchandising, Food Science and Human Nutrition, Human Development and Family Studies, Social Work, Occupational Therapy, etc.).

Concentrations
• Family and Consumer Sciences Concentration
• Family and Consumer Sciences Education Concentration

Major in Family and Consumer Sciences, Family and Consumer Sciences Concentration

The Family and Consumer Sciences concentration provides students with a focus on consumer and family well-being, growth and development of family members, and the relationship of households to their environment. The concentration is interdisciplinary, bringing together courses in human development, family studies, nutrition and foods, consumer sciences, apparel and textiles, and design and merchandising.

It is highly recommended that students participate in internships, volunteer activities, or cooperative extension opportunities to enhance their experiences and development. Graduates who seek advanced degrees attain higher level professional positions.

The concentration includes All-University Core Curriculum courses, subject matter courses, and elective courses to enhance personal and professional development.

Requirements

Effective Spring 2012

Freshman

Select one from the following:

<table>
<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM 130</td>
<td>Design Foundation-Apparel and Merchandising</td>
</tr>
<tr>
<td>ART 100</td>
<td>Introduction to the Visual Arts (GT-AH1)</td>
</tr>
</tbody>
</table>

Select one group from the following:

Group A:

<table>
<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
</tr>
<tr>
<td>CHEM 104</td>
<td>Chemistry in Context Laboratory (GT-SC1)</td>
</tr>
</tbody>
</table>

Group B:
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
</tr>
<tr>
<td>DM 120</td>
<td>Textiles</td>
<td>3</td>
</tr>
<tr>
<td>FACS 179</td>
<td>Introduction to Family and Consumer Sciences</td>
<td>2</td>
</tr>
<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Elective</td>
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**Total Credits:** 29-30

**Sophomore**

Select one from the following:

<table>
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<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
<td></td>
</tr>
<tr>
<td>CS 110</td>
<td>Personal Computing</td>
<td></td>
</tr>
<tr>
<td>DM 272</td>
<td>Consumers in the Marketplace</td>
<td></td>
</tr>
<tr>
<td>HES 145</td>
<td>Health and Wellness</td>
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<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
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<tr>
<td>Economics</td>
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<td>Elective</td>
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**Total Credits:** 30-32

**Junior**

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>FACS 320</td>
<td>Finance-Personal and Family</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 300</td>
<td>Food Principles and Applications</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>HDFS 310</td>
<td>Infant and Child Development in Context</td>
<td></td>
</tr>
<tr>
<td>HDFS 311</td>
<td>Adolescent/Early Adult Development in Context</td>
<td></td>
</tr>
<tr>
<td>HDFS 312</td>
<td>Adult Development-Middle Age and Aging</td>
<td></td>
</tr>
<tr>
<td>INTD 200</td>
<td>Housing Values in America</td>
<td></td>
</tr>
<tr>
<td>SOWK 300</td>
<td>Research in Applied Professions</td>
<td></td>
</tr>
<tr>
<td>Advanced Writing</td>
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<td>2</td>
</tr>
<tr>
<td>FSHN, FTEC, RRM Elective</td>
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<td>3</td>
</tr>
<tr>
<td>Family and Consumer Sciences Electives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
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</table>

**Total Credits:** 29

**Senior**

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>FACS 479</td>
<td>Colloquium-Family and Consumer Sciences</td>
<td>4A,4C</td>
</tr>
<tr>
<td>HDFS 302</td>
<td>Marriage and Family Relationships</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 334</td>
<td>Family and Parenthood Across the Life Cycle</td>
<td>4B</td>
</tr>
<tr>
<td>HDFS 402</td>
<td>Couple and Family Studies</td>
<td>3</td>
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<tr>
<td>HDFS 403</td>
<td>Families in the Legal Environment</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Family and Consumer Sciences Electives</td>
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<td>12</td>
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Support Career Objective-Electives

<table>
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<tr>
<th>Total Credits</th>
<th>Program Total Credits:</th>
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<tbody>
<tr>
<td>31-32</td>
<td>120-122</td>
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</table>

1. Select one course from the ECON subject code.
2. Select courses with subject codes AHS, AM, DM, FACS, FSHN, FTEC, HDFS, INTD, or RRM. Keep in mind the requirement of 42 upper-division credits when choosing these courses.
3. AM 250 is suggested but not required.
4. Select courses to enhance knowledge and skill in chosen career area.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Students are encouraged to complete a Family and Consumer Sciences internship.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>AM 130</td>
<td>Design Foundation-Apparel and Merchandising</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ART 100</td>
<td>Introduction to the Visual Arts (GT-AH1)</td>
<td></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
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Total Credits 15

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
<th>Recommended</th>
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<th>Credits</th>
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<tr>
<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td>4-5</td>
</tr>
<tr>
<td>CHEM 104</td>
<td>Chemistry in Context Laboratory (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>Group B:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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Total Credits 14-15

### Sophomore

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Total Credits 15-16

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<td>DM 272</td>
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Total Credits 3
**Major in Family and Consumer Sciences, Family and Consumer Sciences Education Concentration**

Family and Consumer Sciences Education directly addresses the needs of youth, families, and consumers. Helping to shape the future, teachers of family and consumer sciences impact the lives of individuals, the health of families, and the welfare of society.

The Education concentration has as its mission to teach and model best educational practices to prepare emerging teachers as learners, collaborators, and leaders. The Family and Consumer Sciences licensure program includes general education courses, subject matter courses, and teacher preparation courses.

Students apply for the licensure program in their junior year and participate in practicum experiences working closely with classroom teachers and students in area schools. Throughout the phases of the licensure program, teacher candidates are placed in a middle school and a high school where they apply professional knowledge and refine their skills in order to become effective educators.

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<td>Finance-Personal and Family</td>
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<td>FSHN 300</td>
<td>Food Principles and Applications</td>
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<td>Historical Perspectives</td>
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<td>HDFS 311</td>
<td>Adolescent/Early Adult Development in Context</td>
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<td>HDFS 312</td>
<td>Adult Development-Middle Age and Aging</td>
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<td>INTD 200</td>
<td>Housing Values in America</td>
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<td>SOWK 300</td>
<td>Research in Applied Professions</td>
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<td>FSHN, FTEC, RRM Elective</td>
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<td>HDFS 334</td>
<td>Family and Parenthood Across the Life Cycle</td>
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<td>3</td>
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<td>HDFS 403</td>
<td>Families in the Legal Environment</td>
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<td>3</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<tr>
<td>FACS 479</td>
<td>Colloquium-Family and Consumer Sciences</td>
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<td>4A,4C</td>
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<td>HDFS 402</td>
<td>Couple and Family Studies</td>
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<tr>
<td>Career Objective Elective</td>
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<tr>
<td>Family and Consumer Science Electives</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Program Total Credits:** 120-122
their instructional skills. While student teaching, they work closely with a Family and Consumer Sciences mentor teacher(s) and a university professor(s).

Teacher candidates completing the program meet the requirements for the Bachelor of Science degree in Family and Consumer Sciences, a Colorado Initial Teaching License in Family and Consumer Sciences, and a Family and Consumer Sciences Career and Technical Education endorsement (1200 hours of paid work experience related to FCS is required for the CTE endorsement).

This concentration is accredited and approved by the Colorado Department of Higher Education (CDHE) and the Colorado Department of Education (CDE). Nationally, it is approved by the Teacher Education Accreditation Council.

Students interested in pursuing a teaching license through CSU may refer to the School of Education section in this chapter for general information. Detailed information about the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) program and licensure requirements is available in the Education Building, Room 111.

### Requirements

#### Effective Spring 2015

**Freshman**

Select one group from the following:

**Group A:**

- CHEM 103 Chemistry in Context (GT-SC2) 3A
- CHEM 104 Chemistry in Context Laboratory (GT-SC1) 3A

**Group B:**

- CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
- CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A

- CO 150 College Composition (GT-CO2) 1A 3
- FACS 179 Introduction to Family and Consumer Sciences 2
- FSHN 150 Survey of Human Nutrition 3
- HDFS 101 Individual and Family Development (GT-SS3) 3C 3
- HES 145 Health and Wellness 3
- PSY 100 General Psychology (GT-SS3) 3C 3

- Arts and Humanities 3B 6
- Mathematics 1B 3

**Total Credits** 30-31

**Sophomore**

- AM 101 Fashion Industries 3
- AM 250 Clothing, Adornment and Human Behavior (GT-SS3) 3E 3
- DM 272 Consumers in the Marketplace 3
- ECON *** course 3
- HDFS 310 Infant and Child Development in Context 3
- INTD 129 Introduction to Interior Design 3
- SPCM 200 Public Speaking 3

- Advanced Writing 2 3
- Biological and Physical Sciences 3A 3
- Historical Perspectives 1 3D 3

**Total Credits** 30

**Junior**

- FACS 320 Finance-Personal and Family 3
- EDUC 275 Schooling in the United States (GT-SS3) 3C 3
- EDUC 331 Educational Technology and Assessment 2
- EDUC 340 Literacy and the Learner 3
- EDUC 350 Instruction I-Individualization/Management 3
- EDUC 386 Practicum-Instruction I 1
FACS 479  Colloquium-Family and Consumer Sciences  4A  2
FSHN 300  Food Principles and Applications  3
FSHN 301  Food Principles and Applications Laboratory  2
HDFS 302  Marriage and Family Relationships  3
HDFS 311  Adolescent/Early Adult Development in Context  3
SOWK 300  Research in Applied Professions  3

Total Credits  31

Senior

EDCT 451  Methods-Family/Consumer Sciences Education  4
EDCT 485  Student Teaching  4C  11
EDCT 492  Seminar-Professional Relations  4C  1
EDUC 450  Instruction II-Standards and Assessment  4
EDUC 486E  Practicum: Instruction II  1
HDFS 334  Family and Parenthood Across the Life Cycle  4B  3
HDFS 403  Families in the Legal Environment  3

Family and Consumer Sciences Electives  2

Total Credits  29

Program Total Credits:  120-121

1  Select from Family and Consumer Sciences’ list of recommended courses in category 3D in the AUCC.
2  Select courses with subject codes AHS, AM, DM, FACS, FSHN, FTEC, HDFS, INTD, or RRM.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Student must seek admission to the Teacher Licensure program (see its specific requirements at stepp.cahs.colostate.edu for application process, GPA and other requirements). Teacher licensure includes courses (EDUC and EDCT) that must be taken in each Phase I, II, and III concurrently and prior to the next phase.

**Freshman**

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<td>FSHN 150  Survey of Human Nutrition</td>
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<td>HDFS 101  Individual and Family Development (GT-SS3)</td>
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Total Credits  15

Semester 2

Select one group from the following:

Group A:

CHEM 103  Chemistry in Context (GT-SC2)  X  3A
CHEM 104  Chemistry in Context Laboratory (GT-SC1)  X  3A

Group B:

CHEM 107  Fundamentals of Chemistry (GT-SC2)  X  3A
CHEM 108  Fundamentals of Chemistry Laboratory (GT-SC1)  X  3A

FACS 179  Introduction to Family and Consumer Sciences  X  2
HES 145  Health and Wellness  3
PSY 100  General Psychology (GT-SS3)  X  3C  3

Arts and Humanities  3B  3

CO 150 must be completed by the end of Semester 2.  X

Total Credits  15
### Sophomore

**Semester 3**

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<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
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**Semester 4**

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**Semester 5**

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**Semester 8**

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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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**Master of Science in Student Affairs in Higher Education**

**Requirements**

**Effective Fall 2006**

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<td>Workshop: Student Personnel-Housing/ Auxiliary Services</td>
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<td>EDHE 590E</td>
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<td>EDHE 590F</td>
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<td>EDHE 590G</td>
<td>Workshop: Student Personnel-Wellness Programs</td>
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<td>EDHE 590H</td>
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<td>EDHE 590J</td>
<td>Workshop: Student Personnel-Access and Opportunity in Higher Education</td>
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<td>Workshop: Student Personnel-Leadership and Service in Higher Education</td>
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<td>Workshop: Student Personnel-Working with Student's Parents and Families</td>
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<td>EDHE 590M</td>
<td>Workshop: Student Personnel-Spiritual Dimensions of Student Development</td>
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<td>Financial Management in Student Affairs</td>
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<td>EDHE 661</td>
<td>Inclusive University</td>
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<tr>
<td>EDHE 662</td>
<td>Trends/Issues/Assessment in Higher Education</td>
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<td>EDHE 670</td>
<td>College Student Personnel Administration</td>
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<td>EDHE 671</td>
<td>Higher Education Administration</td>
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<td>EDHE 672</td>
<td>Ethical and Practical Issues-Student Affairs</td>
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<td>EDHE 673</td>
<td>Student Development Theory</td>
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<td>Organizational Behavior in Student Affairs</td>
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<td>Law in Student Affairs</td>
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<td>EDRM 602</td>
<td>Action Research</td>
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<td></td>
<td>or EDRM 666 Program Evaluation</td>
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<tr>
<td>EDRM 698</td>
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<tr>
<td>EDUC 502</td>
<td>Human Relations in Education</td>
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<tr>
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A minimum of 45 credits are required to complete this program.

**Master of Education, Plan A, Adult Education and Training Specialization**

**Requirements**

**Effective Summer 2012**

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<tr>
<td>EDAE 620</td>
<td>Processes and Methods</td>
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<td>EDAE 624</td>
<td>Adult Teaching and Learning I</td>
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<tr>
<td>EDAE 639</td>
<td>Instructional Design</td>
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<td>EDRM 600</td>
<td>Introduction to Research Methods</td>
<td>3</td>
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<tr>
<td>EDUC 651</td>
<td>Multicultural and Special Populations</td>
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<td>Addtl Res. 1</td>
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<tr>
<td>Elective 2</td>
<td>Select a minimum of 3 credits from department list in consultation with graduate advisor</td>
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A minimum of 30 credits are required to complete this program.

1 Select course in consultation with graduate advisor.

2 Select a minimum of 3 credits from department list in consultation with graduate advisor.

**Master of Education, Plan B, Adult Education and Training Specialization**

**Requirements**

**Effective Summer 2012**

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<td>EDAE 620</td>
<td>Processes and Methods</td>
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<td>EDAE 624</td>
<td>Adult Teaching and Learning I</td>
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<td>EDAE 639</td>
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<tr>
<td>EDRM 600</td>
<td>Introduction to Research Methods</td>
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<td>EDUC 651</td>
<td>Multicultural and Special Populations</td>
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<tr>
<td>Elective 1</td>
<td>Select course in consultation with graduate advisor</td>
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<tr>
<td>Elective 2</td>
<td>Select a minimum of 3 credits from department list in consultation with graduate advisor</td>
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</table>
A minimum of 30 credits are required to complete this program.

1 Select a minimum of 9 credits from department list in consultation with graduate advisor.

Master of Education in Education and Human Resources Studies, Counseling and Career Development Specialization

Requirements
Effective Spring 2014

<table>
<thead>
<tr>
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<tr>
<td>EDCO 500</td>
<td>Career and Employment Concepts</td>
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<td>EDCO 625</td>
<td>Foundations of Counseling</td>
<td>3</td>
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<td>EDCO 650</td>
<td>Individual Guidance and Counseling</td>
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<td>EDCO 651</td>
<td>Group Guidance and Counseling</td>
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<td>EDCO 652</td>
<td>Ethics in Counseling/Career Development</td>
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<td>EDCO 656</td>
<td>Tests and Assessment</td>
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<td>EDCO 660</td>
<td>Career Development Counseling</td>
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<td>EDCO 686</td>
<td>Practicum-Guidance and Counseling</td>
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<td>EDCO 693</td>
<td>Seminar-Guidance and Counseling</td>
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<td>Group Study</td>
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Specialization Option

Select one specialization option 15-17

Total Credits 52-54

Options

School Counseling Option

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<td>EDCO 550</td>
<td>Professional School Counseling</td>
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<td>EDCO 552</td>
<td>School Counseling Program Delivery/ Evaluation</td>
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<td>EDCO 687</td>
<td>Internship-Guidance and Counseling</td>
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Total Credits 15

A minimum of 52 credits are required to complete this program.

Career Counseling Option

<table>
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<tr>
<td>EDCO 687</td>
<td>Internship-Guidance and Counseling</td>
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<tr>
<td>EDCO 692</td>
<td>Seminar-Brief Counseling</td>
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</table>

Total Credits 15

A minimum of 30 credits are required to complete this program.

Master of Education and Human Resource Studies, Education Sciences Specialization

Requirements
Effective Fall 2014

Instructional Sciences - Option 1

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<tr>
<td>EDRM 600</td>
<td>Introduction to Research Methods</td>
<td>3</td>
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<tr>
<td>EDRM 612</td>
<td>Assessing Students in Educational Settings</td>
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<tr>
<td>EDUC 530</td>
<td>Technology Enhanced Learning</td>
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<tr>
<td>EDUC 619</td>
<td>Curriculum Development</td>
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<tr>
<td>EDUC 628</td>
<td>Models of Teaching</td>
<td>3</td>
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<tr>
<td>EDUC 629</td>
<td>Communication and Classrooms</td>
<td>3</td>
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<tr>
<td>EDUC 651</td>
<td>Multicultural and Special Populations</td>
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</table>

Select one of the following plans: 9

Plan A:
- EDRM 606 Principles: Quantitative Data Analysis
- EDRM 699 Thesis

Plan B:
- EDRM 698 Research

Electives

Total Credits 30

A minimum of 30 credits are required to complete this program.

Administration - Option 2

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<thead>
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<tr>
<td>EDRM 600</td>
<td>Introduction to Research Methods</td>
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<tr>
<td>EDUC 610</td>
<td>Principles of Supervision and Evaluation</td>
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<tr>
<td>EDUC 618</td>
<td>School Law</td>
<td>3</td>
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<tr>
<td>EDUC 619</td>
<td>Curriculum Development</td>
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<tr>
<td>EDUC 645</td>
<td>Leadership and Ethics in Public Education</td>
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<tr>
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<td>EDUC 646</td>
<td>School Resource Management</td>
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<td>EDUC 647</td>
<td>School Culture, Climate, and Communications</td>
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<tr>
<td>EDUC 648A</td>
<td>Role of the Principal: Professional Learning</td>
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<td>EDUC 648B</td>
<td>Role of the Principal: Managing and Leading</td>
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<td>Change</td>
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<td>EDUC 651</td>
<td>Multicultural and Special Populations</td>
<td>3</td>
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<tr>
<td>EDUC 687B</td>
<td>Internship: Principal</td>
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Total Credits: 33

A minimum of 33 credits are required to complete this program.

Teacher Licensure - Option 3

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<tr>
<td>EDRM 602</td>
<td>Action Research</td>
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<tr>
<td>EDUC 525C</td>
<td>Expert Teaching: Literacy and Numeracy</td>
<td>3</td>
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<tr>
<td>EDUC 526</td>
<td>Interdisciplinary Methods</td>
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<td>EDUC 573</td>
<td>Differentiating Instruction for Diverse Needs</td>
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<td>EDUC 619</td>
<td>Curriculum Development</td>
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<td>EDUC 625</td>
<td>Contexts of Schooling</td>
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<td>EDUC 628</td>
<td>Models of Teaching</td>
<td>3</td>
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<tr>
<td>EDUC 687D</td>
<td>Internship: Teacher Licensure I</td>
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<td>EDUC 687E</td>
<td>Internship: Teacher Licensure II</td>
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<td>EDUC 693B</td>
<td>Seminar: Instruction</td>
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<td>EDUC 693C</td>
<td>Seminar: Teacher Licensure Capstone</td>
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Total Credits: 41

A minimum of 41 credits are required to complete this program.

Master of Education in Education and Human Resource Studies, Organizational Learning, Performance and Change Specialization

Requirements
Effective Spring 2014

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<th>Code</th>
<th>Title</th>
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<tr>
<td>EDOD 506</td>
<td>Human Resource Development</td>
<td>3</td>
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<tr>
<td>EDOD 671</td>
<td>Establish Relations, Diagnose Organizations</td>
<td>3</td>
</tr>
<tr>
<td>EDOD 673</td>
<td>Plan and Implement Change Interventions</td>
<td>3</td>
</tr>
<tr>
<td>EDOD 674</td>
<td>Analyze Workplace Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDOD 675</td>
<td>Design, Develop, Implement Workplace Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDOD 676</td>
<td>Evaluate Workplace Learning</td>
<td>3</td>
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<tr>
<td>EDOD 677</td>
<td>Action Learning and Inquiry</td>
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</tr>
<tr>
<td>EDOD 678</td>
<td>Assess Change Interventions</td>
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<tr>
<td>EDOD 692A</td>
<td>Seminar: HRD Concepts--Workplace Learning</td>
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<tr>
<td>EDOD 692B</td>
<td>Seminar: HRD Concepts--Organizational Learning</td>
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Research

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<tr>
<td>EDRM 698</td>
<td>Research</td>
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Total Credits: 33

A minimum of 33 credits are required to complete this program.

Ph.D. in Education and Human Resource Studies, School Leadership Specialization

Requirements
Effective Spring 2012

First Year

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<th>Code</th>
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<tbody>
<tr>
<td>EDRM 700</td>
<td>Quantitative Research Methods</td>
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<td>EDRM 704</td>
<td>Qualitative Research</td>
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<tr>
<td>EDUC 709</td>
<td>Leadership Development</td>
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<tr>
<td>EDUC 714</td>
<td>Education Policy Analysis</td>
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<tr>
<td>EDUC 715</td>
<td>Critical Issues for Special Populations</td>
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Total Credits: 15

Second Year

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<tr>
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<td>Theory and Practice of Change</td>
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<tr>
<td>EDRM 706</td>
<td>Analysis of Variance--Education Research</td>
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<td>EDUC 713</td>
<td>Teaching, Learning, and Professional Growth</td>
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<td>EDUC 716</td>
<td>Capstone: Educational Equity and Reform</td>
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<td>EDUC 725</td>
<td>Professionalism in Education and Leadership</td>
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Total Credits: 15

Third Year

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<tbody>
<tr>
<td>EDOD 667</td>
<td>Power-Politics-Influence in Organizations</td>
<td>3</td>
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<tr>
<td>EDOD 670</td>
<td>Strategic Human Resource Development</td>
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<tr>
<td>EDRM 666</td>
<td>Program Evaluation</td>
<td>3</td>
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<tr>
<td>EDRM 705 or 707</td>
<td>Qualitative Data Analysis</td>
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<td>Quantitative Data Collection Methods/Analysis</td>
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Total Credits: 15

A minimum of 33 credits are required to complete this program.
**Fourth Year**

<table>
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<td>Seminar: Proposal Development</td>
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Total Credits: 9

**Fifth Year**

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Total Credits: 6

Program Total Credits: 60

**A minimum of 90 credits are required to complete this program.**

---

**Ph.D. in Education and Human Resource Studies, Higher Education Leadership Specialization, College and University Leadership Option**

**Requirements**

**Effective Spring 2014**

**First Year**

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<tr>
<td>EDHE 673</td>
<td>Student Development Theory</td>
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<tr>
<td>EDRM 702</td>
<td>Foundations of Educational Research</td>
<td>3</td>
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<td>EDUC 709</td>
<td>Leadership Development</td>
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<td>EDUC 710</td>
<td>Higher Education Finance</td>
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Total Credits: 15

**Second Year**

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<td>EDCL 701</td>
<td>Higher Education Law</td>
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<td>EDRM 704</td>
<td>Qualitative Research</td>
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<td>EDRM 705</td>
<td>Qualitative Data Analysis</td>
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<td>EDUC 675</td>
<td>Analyzing Education Literature</td>
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<td>EDUC 725</td>
<td>Professionalism in Education and Leadership</td>
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Total Credits: 15

**Third Year**

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<td>EDOD 769</td>
<td>Theory and Practice of Change</td>
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EDRM 666  Program Evaluation  3
EDRM 700  Quantitative Research Methods  3
EDRM 707  Quantitative Data Collection Methods/ Analysis  3
EDUC 714  Education Policy Analysis  3

Total Credits: 15

Program Total Credits: 60

**A minimum of 60 credits are required to complete this program.**

---

**Ph.D. in Education and Human Resource Studies, Higher Education Leadership Specialization, Community College Leadership Option**

**Requirements**

**Effective Summer 2011**

**First Year**

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<td>The Community College</td>
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<td>EDCL 703</td>
<td>Community College Leadership</td>
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<td>EDHE 673</td>
<td>Student Development Theory</td>
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</tr>
<tr>
<td>EDRM 702</td>
<td>Foundations of Educational Research</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 709</td>
<td>Leadership Development</td>
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Total Credits: 15

**Second Year**

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<tbody>
<tr>
<td>EDRM 606</td>
<td>Principles: Quantitative Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EDRM 700</td>
<td>Quantitative Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>EDRM 704</td>
<td>Qualitative Research</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 675</td>
<td>Analyzing Education Literature</td>
<td>3</td>
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<tr>
<td>EDUC 725</td>
<td>Professionalism in Education and Leadership</td>
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</table>

Total Credits: 15

**Third Year**

<table>
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<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>EDOD 769</td>
<td>Theory and Practice of Change</td>
<td>3</td>
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</tbody>
</table>

Program Total Credits: 60
EDCL 701  Higher Education Law  3  
EDOD 769  Theory and Practice of Change  3  
EDRM 707  Quantitative Data Collection Methods/Analysis  3  
EDRM 708  Narrative Inquiry  3  
EDUC 710  Higher Education Finance  3  

**Total Credits**  15  

**Fourth Year**  
EDCL 750  Simulated Presidential Cabinet I  3  
EDCL 751  Simulated Presidential Cabinet II  3  
EDRM 792B  Seminar: Proposal Development  3  

**Total Credits**  9  

**Fifth Year**  
EDRM 792A  Seminar: Research Methodology  3  
EDRM 799  Dissertation  6  

**Total Credits**  9  

Program Total Credits:  63  

A minimum of 63 credits are required to complete this program.

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**Ph.D. in Education and Human Resource Studies, Organizational Learning, Performance, and Change Specialization**

**Requirements Effective Fall 2014**

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tr>
<td>EDRM 700</td>
<td>Quantitative Research Methods</td>
<td>3</td>
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<tr>
<td>EDRM 702</td>
<td>Foundations of Educational Research</td>
<td>3</td>
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<tr>
<td>EDRM 704</td>
<td>Qualitative Research</td>
<td>3</td>
</tr>
<tr>
<td>EDRM 792B</td>
<td>Seminar: Proposal Development</td>
<td>3</td>
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<tr>
<td>Select one track from the following:</td>
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<td>6</td>
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</table>

- **Quantitative Track**
  - Select two courses from the following:
    - EDRM 701  Applied Linear Models-Educational Research
    - EDRM 703  Applied Longitudinal Data Analysis
    - EDRM 706  Analysis of Variance-Education Research
    - EDRM 707  Quantitative Data Collection Methods/Analysis

- **Qualitative Track**
  - Select two courses from the following:
    - EDRM 705  Qualitative Data Analysis

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**OLPC Content Courses**

<table>
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<tr>
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<tr>
<td>EDOD 706</td>
<td>Organizational Learning, Performance, Change</td>
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<tr>
<td>EDRD 761</td>
<td>Evaluation and Assessment of Interventions</td>
<td>3</td>
</tr>
<tr>
<td>EDRD 766</td>
<td>Scenario Planning in Organizations</td>
<td>3</td>
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<tr>
<td>EDRD 768</td>
<td>Workforce Development</td>
<td>3</td>
</tr>
<tr>
<td>EDRD 769</td>
<td>Theory and Practice of Change</td>
<td>3</td>
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<tr>
<td>EDRD 771</td>
<td>Social Foundations of the Workplace</td>
<td>3</td>
</tr>
<tr>
<td>EDRD 772</td>
<td>Systems Leadership</td>
<td>3</td>
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<tr>
<td>EDRD 773</td>
<td>Seminar-Human Resource Development</td>
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**Dissertation**

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDRD 792</td>
<td>Seminar-Human Resource Development</td>
<td>6-9</td>
</tr>
<tr>
<td>EDRD 799</td>
<td>Dissertation</td>
<td>6-9</td>
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</table>

**Master Degree Credit**

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<th>Credits</th>
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<tbody>
<tr>
<td>EDRD 799</td>
<td>Dissertation</td>
<td>6-9</td>
</tr>
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</table>

**Total Credits**  90  

A minimum of 90 credits are required to complete this program.

1. Students select the Quantitative or Qualitative track with approval of advisor and graduate committee.
2. A maximum of 30 credits may be accepted from a master's degree.

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**Department of Food Science and Human Nutrition**

Office in Gifford Building, Room 234  
(970) 491-FOOD (3663)  
fshn.chhs.colostate.edu (http://fshn.chhs.colostate.edu)

Michael Pagliassotti, PhD, Department Head  
Dietetic Program Director, Mary Harris, Ph.D., R.D.  
Hospitality Management Program Coordinator, Jeff Miller, Ph.D.

**Undergraduate Majors**

- Major in Nutrition and Food Science  
  - Dietetics and Nutrition Management Concentration  
    - Accredited Didactic Program Option  
    - Childhood Nutrition Option
Minors

- Minor in Nutrition
- Food Science/Safety Interdisciplinary Minor

Graduate

Graduate Programs in Food Science and Human Nutrition

At the graduate level, both M.S. and Ph.D. degrees are offered in Food Science and Nutrition. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Food Science and Human Nutrition (http://www.fshn.chhs.colostate.edu).

Master Programs

- Master of Science in Food Science and Nutrition, Plan A*
- Master of Science in Food Science and Nutrition, Plan B*
- Master of Science in Food Science and Nutrition, Plan A, Nutrition and Exercise Science Specialization
- Master of Science in Food Science and Nutrition, Plan B, Nutrition and Exercise Science Specialization
- Master of Science in Food Science and Nutrition, Dietetics Option (Online)

Ph.D.

- Ph.D in Food Science and Nutrition*

* Please see department for program of study.

Courses

Subjects in this department include: Food Science and Human Nutrition (FSHN) and Food Technology (FTEC) and RESTAURANT + RESORT MGMT-RRM (RRM).

Food Science and Human Nutrition (FSHN)

FSHN 125 Food and Nutrition in Health Credits: 2 (2-0-0)
Course Description: Nutritional quality and safety of food related to human health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FSHN 150 Survey of Human Nutrition Credits: 3 (3-0-0)
Course Description: Basic nutrition principles and concepts; their application to personal health and interactions with societal and environmental issues.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 192 First Year Seminar Credit: 1 (0-0-1)
Course Description: Facilitate a successful transition to college for new incoming students by emphasizing personal growth and identifying campus resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 300 Food Principles and Applications Credits: 3 (3-0-0)
Course Description: Application of food preparation theories to modification and evaluation of food products.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (FSHN 150).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 301 Food Principles and Applications Laboratory Credits: 2 (0-6-0)
Course Description: Techniques and manipulative skills for preparation and evaluation of standard and modified food products.
Prerequisite: FSHN 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FSHN 350 Human Nutrition Credits: 3 (3-0-0)
Course Description: Metabolism of macro and micronutrients; physiologic basis underlying dietary recommendations for human health. Nutrients, dietary requirements for physical well-being; evaluation of various diets.
Prerequisite: (BMS 300, may be taken concurrently) and (CHEM 245 or CHEM 341).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 360 Nutrition Assessment Credits: 2 (2-0-0)
Course Description: Principles of anthropometric, dietary, and biochemical assessment of nutritional status.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 386A Practicum: Food Service Management Credits: 2 (0-0-4)
Course Description: Nutrition Assessment
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
FSHN 386B  Practicum: Gerontology  Credits: 3 (0-0-9)
Course Description: Pre-professional skills to prepare students for the pursuit of careers in the field of dietetics.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 392  Dietetic Practice Seminar  Credit: 1 (0-0-1)
Course Description: Pre-professional skills to prepare students for the pursuit of careers in the field of dietetics.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 428  Nutrition Teaching and Counseling Techniques  Credits: 3 (3-0-0)
Course Description: Objectives, principles, and organization of subject matter for nutrition education and counseling.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 444  Nutrition and Aging  Credit: 1 (1-0-0)
Course Description: Effect of aging on nutrient needs and impact of nutrition on successful aging and health in the elderly.
Prerequisite: FSHN 150.
Registration Information: Admission to Gerontology Interdisciplinary Studies Program can be substituted for FSHN 150. Credit not allowed for both FSHN 444 and FSHN 459. Sections may be offered: Online.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 445  Early Childhood Health, Safety, and Nutrition  Credits: 3 (0-0-3)
Also Offered As: HDFS 445.
Course Description: Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Credit not allowed for both FSHN 445 and HDFS 445. Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 450  Medical Nutrition Therapy  Credits: 5 (4-2-0)
Course Description: Use of nutrition therapy in the treatment of acute conditions and chronic disease states.
Prerequisite: BMS 300 and FSHN 350.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FSHN 451  Community Nutrition  Credits: 3 (3-0-0)
Course Description: Influences on nutritional status, assessment of nutrition problems and needs, planning and evaluation of nutrition intervention programs.
Prerequisite: FSHN 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 455  Food Systems: Impact on Health/Food Security  Credits: 2 (1-0-1)
Course Description: Conventional and alternative food systems and their impact on nutrition, health, food security, and the environment.
Prerequisite: FSHN 350 or FTEC 447.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 459  Nutrition in the Life Cycle  Credits: 3 (3-0-0)
Course Description: Nutritional aspects associated with each phase of human life cycle including pregnancy, infancy, childhood, adolescence, and early and late adulthood.
Prerequisite: FSHN 350.
Registration Information: Credit not allowed for both FSHN 459 and FSHN 444.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 470  Integrative Nutrition and Metabolism  Credits: 3 (3-0-0)
Course Description: Influence of nutrition on roles and action of hormones and gene expression on metabolism.
Prerequisite: BC 351 and FSHN 350.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 484  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 486A  Practicum: Counseling  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: FSHN 350.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.
FSHN 486B Practicum: Nutrition  Credits: Var[1-3] (0-0-0)
Course Description: Supervised off-campus experience in nutrition.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 486C Practicum: Food Service Management  Credits: Var[1-3] (0-0-0)
Course Description: Supervised off-campus experience in food service management.
Prerequisite: FSHN 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 492 Seminar in Dietetics and Nutrition  Credits: 2 (0-0-2)
Course Description: Capstone seminar in nutrition and dietetics.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 495A Independent Study: Nutrition  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 495B Independent Study: Food Service Management  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 496A Group Study in Dietetics and Nutrition: Energy, Weight Management  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496B Group Study in Dietetics and Nutrition: Sustainable Food Issues  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496C Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496D Group Study in Dietetics and Nutrition: Nutrition for Athletes  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496E Group Study in Dietetics and Nutrition: Food Safety  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496F Group Study in Dietetics and Nutrition: Service Marketing  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496G Group Study in Dietetics and Nutrition: Food and Consumer Issues  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496H Group Study in Dietetics and Nutrition: Public Health and Policy  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496I Group Study in Dietetics and Nutrition: Special Topics  Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 500 Food Systems, Nutrition, and Food Security Credits: 2 (2-0-0)
Course Description: Global and local food systems and their potential influence on nutrition and food security.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 501 Research Methods in Dietetics Credits: 3 (0-0-3)
Course Description: Testing and generating theory. Methods for collecting and analyzing quantitative and qualitative data, critique of research and proposal development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 502 Food Systems, Nutrition, and Food Security Credits: 2 (2-0-0)
Course Description: Global and local food systems and their potential influence on nutrition and food security.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 503 Issues in Dietetics Practice Credits: 3 (0-0-3)
Course Description: Environment in which foodservice, hospitality, and healthcare organizations operate; impact of change on hospitality and healthcare organizations.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 504 Micronutrients Credits: 3 (0-0-3)
Course Description: Coordination of structure and function related to metabolic needs as a basis for evaluating micronutrient needs in normal or altered metabolic states.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 505 Nutrition and Physical Activity in Aging Credits: 3 (0-0-3)
Course Description: Physiological changes during aging and impacts on health and disease; focus on successful aging with emphasis on physical activity and nutrition.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 506 Nutrition and Human Performance Credits: 3 (0-0-3)
Course Description: Relationship of specific nutrients and optimal nutrition to physical efficiency and performance.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 507 Nutrition Education in the Community Credits: 3 (0-0-3)
Course Description: Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research and evaluation.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 508 International Nutrition and World Hunger Credits: 3 (0-0-3)
Course Description: Magnitude, causes, and nature of hunger and under-nurturing; programs and policies to alleviate hunger.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 509 Nutrition Counseling and Education Methods Credits: 3 (0-0-3)
Course Description: Application of learning theories and nutrition counseling with individuals and groups in the community and clinical settings.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 510 Pediatric Clinical Nutrition Credits: 3 (0-0-3)
Course Description: Physiological, biochemical and nutritional aspects of disease processes relevant to infants and children up to 18 years of age.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 511 Maternal and Child Nutrition Credits: 3 (0-0-3)
Course Description: Behavioral, physiological and public health issues impacting dietary and nutritional factors that support growth and development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics; written permission of instructor. Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 512 Nutritional Aspects of Oncology Credits: 3 (0-0-3)
Course Description: Relationships between nutrition and cancer including the role of nutrition in specific cancers, cancer prevention and patient management.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 520  Advanced Medical Nutrition Therapy  Credits: 3 (3-0-0)
Course Description: Role of nutrition in etiology and treatment of selected disorders.
Prerequisite: FSHN 550 or FSHN 551.
Registration Information: FSHN 550 or FSHN 551 or admission to GP-IDEA program in Dietetics. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 525  Nutrition Education Theories and Practice  Credits: 2 (2-0-0)
Course Description: Examination of current theories, skills, and models used in nutrition education programs as preparation for research and practice.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 540  Nutrigenomics and Advanced Lipid Metabolism  Credits: 3 (0-0-3)
Course Description: How nutrients regulate gene expressions (nutrigenetics) and how genotype influences an individual's nutrient requirements (nutrigenomics).
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in Dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 550  Advanced Nutritional Science I  Credits: 3 (3-0-0)
Course Description: Protein, vitamin, mineral metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 551  Advanced Nutritional Science II  Credits: 3 (3-0-0)
Course Description: Carbohydrate, lipid, energy metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 575  Nutrition Education for a Healthy Heart  Credit: 1 (0-0-1)
Course Description: Nutrition-related issues of atherosclerotic cardiovascular disease risk reduction and background in the art/science of facilitating behavior change.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 586  Practicum-Advanced Clinical Nutrition  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 587A  Internship: Clinical Dietetics  Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587B  Internship: Community Dietetics  Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587C  Internship: Food Service Management  Credits: 6 (0-18-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 590  Workshop  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 620  Community Nutrition Planning and Evaluation  Credits: 3 (2-0-1)
Course Description: Community nutrition assessment; nutrition program planning and evaluation, nutrition policy analysis.
Prerequisite: FSHN 350.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 628  Advanced Nutrition Counseling Techniques  Credits: 2 (2-0-0)
Course Description: Principles, strategies and techniques for interviewing, assessing and providing nutrition counseling in community settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 630  Integrative Exercise and Nutrition Metabolism  Credits: 3 (3-0-0)
Also Offered As: HES 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: HES 610 and FSHN 551.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 640 Selected Topics in Nutritional Epidemiology Credits: 2 (2-0-0)
Course Description: Overview of topics in nutritional epidemiology; study design, interpretation of findings, linkage of data to action.
Prerequisite: (FSHN 350) and (STAT 301 or STAT 307 or ERHS 307).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650A Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650B Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 551.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 650C Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics Credits: 2 (2-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 551.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660 Women's Issues in Lifecycle Nutrition Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 661 International Nutrition Credits: 2 (2-0-0)
Course Description: Roles of technological programs and international agencies in meeting nutritional needs.
Prerequisite: FSHN 350.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 670 Laboratory Methods Credits: 2 (1-2-0)
Course Description: Laboratory techniques and instrumentation in nutrition and food science.
Prerequisite: CHEM 245 or CHEM 246.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 675 Regulation of Energy Intake Credits: 3 (3-0-0)
Course Description: Central and peripheral mechanisms controlling energy intake with emphasis on humans. Current theories, experimental approaches, and new research.
Prerequisite: FSHN 350 and PSY 454.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

FSHN 686A Practicum: Counseling Credits: Var[1-18] (0-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: FSHN 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

FSHN 686B Practicum: Nutrition Credits: Var[1-18] (0-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

FSHN 686C Practicum: Food Services Credits: Var[1-18] (0-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

FSHN 695A Independent Study: Food Science Credits: Var[1-18] (0-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 695B Independent Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FSHN 695C Independent Study: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696A Group Study: Food Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696B Group Study: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 696C Group Study: Dietetics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 696D Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 698A Research: Dietetics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the GP-IDEA program in Dietetics.
Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698B Research: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698C Research: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698B Thesis: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 698C Thesis: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 700 Cellular Nutrition Credits: 2 (2-0-0)
Course Description: Essential nutrient requirements of cells and organs.
Prerequisite: FSHN 550 and FSHN 551 or BC 403 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 750 Nutritional Basis of Chronic Disease Credits: 2 (2-0-0)
Course Description: Role of nutrition in the pathogenesis and prevention of specific chronic diseases.
Prerequisite: FSHN 550 and FSHN 551.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 792 Seminar-Research Topics in Nutrition Credit: 1 (0-0-1)
Course Description: Ph.D. seminar in literature review.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 796 Group Study Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Food Technology (FTEC)

FTEC 110 Food-From Farm to Table Credits: 3 (3-0-0)
Course Description: Commercial food processing, related to preservation and enhancing of food quality, safety, and value.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 210 Science of Food Fermentation Credits: 3 (2-2-0)
Course Description: Science, history, culture, gastronomy, safety, health, and nutrition aspects of fermented foods and beverages.
Prerequisite: (CHEM 107 or CHEM 111) and (LIFE 205 or BZ 111 and BZ 110).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 350 Fermentation Microbiology Credits: 2 (2-0-0)
Course Description: Integration of fermentation science, microbiology, and chemistry.
Prerequisite: CHEM 245 or FTEC 210 or LIFE 206 or MIP 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 360 Brewing Processes Credits: 3 (1-4-0)
Course Description: Influence of raw material selection, malting, mashing, boiling, and fermentation on quality of beverages.
Prerequisite: CHEM 245 and FTEC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 400 Food Safety Credits: 3 (3-0-0)
Course Description: Safety of human food emphasizing safe production, processing, marketing, preparation, consumption, and regulations.
Prerequisite: CHEM 107 or CHEM 111.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FTEC 422 Brewing Analysis and Quality Control Credits: 2 (1-2-0)
Course Description: Assessment, quantification, and control of various aspects of commercial beer production.
Prerequisite: FTEC 460.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 430 Sensory Evaluation of Fermented Products Credits: 2 (1-2-0)
Course Description: Application of sensory evaluation techniques to the study of fermented foods.
Prerequisite: FSHN 301 or FTEC 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 440 Refining and Packaging Technology Credits: 2 (2-0-0)
Course Description: Science, technology, and management of refining and packaging.
Prerequisite: FTEC 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 447 Food Chemistry Credits: 2 (2-0-0)
Course Description: Chemistry of food constituents as related to food quality and stability.
Prerequisite: CHEM 245 or CHEM 345.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 460 Brewing Science and Technology Credits: 3 (2-2-0)
Course Description: Scientific and technical aspects of brewing, fermenting, finishing, and evaluating microbrewed style of lagers and ales.
Prerequisite: (CHEM 245) and (MATH 118).
Registration Information: 21 years of age. Must have completed 60 credits. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 465 Food Production Management Credits: 2 (2-0-0)
Course Description: Production, operation, and management techniques used in the food industry at company, local and international levels.
Prerequisite: FTEC 360, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 478 Phytochemicals and Probiotics for Health Credits: 2 (2-0-0)
Course Description: Examination of phytochemistry and probiotic organisms important in human health.
Prerequisite: BC 351.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 487 Internship Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FTEC 492 Seminar: Fermentation Science and Food Safety Credits: 2 (1-0-1)
Course Description: Capstone seminar in fermentation science and food safety.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 496A Group Study Fermentation Science: Current Issues Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 496B Group Study Fermentation Science: Functional Foods in Health Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 570 Food Product Development Credits: 2 (2-0-0)
Course Description: Food product concepts, feasibility, and evaluation.
Prerequisite: FTEC 447.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 572 Food Biotechnology Credits: 2 (2-0-0)
Course Description: Interrelationships among microorganisms, food processing methods, advances in biotechnology and food quality, spoilage, shelf-life and safety.
Prerequisite: MIP 334.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 574 Current Issues in Food Safety Credits: 2 (2-0-0)
Course Description: Current food safety issues from field to table; microbiological, consumer, processing, and agricultural issues.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 576 Cereal Science Credits: 2 (2-0-0)
Course Description: Chemistry and functionality of cereal grain components and their importance in human nutrition.
Prerequisite: FTEC 447.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 578 Bioactives and Probiotics for Health Credits: 3 (2-0-1)
Course Description: Mechanisms through which functional foods and probiotics modulate intracellular signal transduction and protein expression in chronic disease states.
Prerequisite: (BC 351) and (LIFE 205 or MIP 300).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring (even years).
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RESTAURANT + RESORT MGMT-RRM (RRM)

RRM 101 Hospitality Industry Credits: 3 (3-0-0)
Course Description: Food service, lodging, and tourism industries; exploration of various industry segments and career opportunities.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 200 Hotel Operations Credits: 3 (3-0-0)
Course Description: Front office and room management as related to resorts and hotels. Computer application, financial controls, employee and guest relations.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 310 Food Service Systems-Operations Credits: 3 (3-0-0)
Course Description: Technical operations: menu planning, evaluation, recipe standardization, forecasting, food cost, sanitation, hospital food distribution systems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
RRM 311 Food Service Systems-Production and Purchasing Credits: 3 (3-0-0)
Course Description: Quantity food production principles, purchasing specifications, market channels.
Prerequisite: RRM 310.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 312 Hospitality Human Resource Management Credits: 3 (2-0-1)
Course Description: Principles and practices of employee management in the hospitality industry including employment process, training, legal aspects, performance.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 330 Alcohol Beverage Control and Management Credits: 2 (2-0-0)
Course Description: Classification, production, and service of controlled beverages; management of facilities and people; safe service training; financial controls.
Prerequisite: CHEM 103, may be taken concurrently or CHEM 107, may be taken concurrently or CHEM 111, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

RRM 340 Restaurant Operations Credits: 4 (0-8-0)
Course Description: Principles, practices, philosophies, systems for daily operation of casual or fine dining restaurant; focus on developing solutions to problems.
Prerequisite: RRM 101, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 345 Food, Beverage, and Labor Cost Control Credits: 3 (3-0-0)
Course Description: Cost control for food, beverage, and labor in the hospitality industry.
Prerequisite: ACT 205 and CS 110.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 350 Restaurant and Resort Marketing Credits: 3 (3-0-0)
Course Description: Restaurant and resort operations marketing, including planning, promotion, and special industry considerations.
Prerequisite: RRM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 386 Practicum Credits: 3 (0-0-9)
Course Description: Practicum in Hospitality Management.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 400 Food and Society Credits: 3 (2-0-1)
Course Description: Exploration of the influence of food, dining, and nutrition on cultural aspects of the human experience.
Prerequisite: (SOC 100 or PSY 100) and (AMST 100 or AMST 101 or ANTH 140 or NR 320 or HIST 252 or HIST 255 or ETST 250 or ETST 252 or ETST 255 or HIST 101 or HIST 150 or HIST 151 or HIST 171 or HIST 250 or HIST 121) and (AGRI 270 or HIST 170 or AM 250 or ANTH 200 or LJPN 250 or LB 170 or LB 171 or ETST 100 or PHIL 170 or SA 482 or E 238 or E 245 or HIST 100 or ETST 205 or ETST 253 or ETST 256 or PH 110 or HIST 115 or HIST 120 or IE 116 or IE 270 or IE 370 or HORT 171 or SOC 171 or ECON 205 or ECON 325 or ECON 326 or ECON 421 or LCHI 250 or LARA 250 or LGER 250 or LRUS 250 or LSPA 250 or AGRI 116).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 415 Catering Techniques and Culinary Arts Credits: 3 (0-6-0)
Course Description: Management of advanced techniques in culinary technique; catering of food and beverages for special functions.
Prerequisite: RRM 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 450 Leadership in the Hospitality Industry Credits: 3 (3-0-0)
Course Description: Exploration of leadership skills, their relationship to ethics through self-analysis, and leading change in the hospitality industry.
Prerequisite: RRM 310 and MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 460 Event and Conference Planning Credits: 3 (3-0-0)
Also Offered As: NRRT 460.
Course Description: Foundation in planning, organizing, and producing special events and conferences. Functions and strategies for effective event management.
Prerequisite: NRRT 270 or RRM 101.
Registration Information: Credit not allowed for both RRM 460 and NRRT 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 487 Internship: Hospitality Management Credits: 3 (0-0-9)
Course Description:
Prerequisite: RRM 200 and RRM 311, may be taken concurrently.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RRM 492 Seminar on Hospitality Management Credits: 3 (0-0-3)
Course Description: Applying and synthesizing service knowledge and management functions; project discussions, benchmark presentations, execution of a capstone project.
Prerequisite: MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
RRM 500 Understanding Food Credits: 3 (3-0-0)
Course Description: Role of food in the creation of identity, as a driver of technology, and the prominent role food plays in the media.
Prerequisite: RRM 400.
Registration Information: RRM 400 or admission to the GPIdea M.S. in Dietetics program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 510 Foodservice Management Credits: 2 (1-0-1)
Course Description: Analysis of a wide variety of foodservice operations, including procurement, forecasting, operational design, and menu planning.
Prerequisite: NRRT 402 or NRRT 471.
Registration Information: This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 520 Lodging Management Credits: 2 (1-0-1)
Course Description: Operating standards and practices essential to the profitability of a hotel, lodging, and accommodation enterprise.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 604 Research Methods in Food and Nutrition Credits: 3 (3-0-0)
Course Description: Research techniques used in food and nutrition disciplines. Emphasis on design, preparation, and evaluation of research.
Prerequisite: EDRM 606 or STAT 301 or STAT 311.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 686 Practicum-Food Service Management Credit: 1 (0-4-0)
Course Description: Food production, menu planning, nutritional analysis and food costing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Fermentation Science and Technology

Fermentation Science and Technology (http://www.fshn.chhs.colostate.edu/students/undergraduate/fermentation-science) is a multi-disciplinary major focusing on the science of fermented foods and beverages. The curriculum focuses on the science of the processes and methods involved with using microorganisms in the commercial production of fermented products. Courses in the major also emphasize the safety, culinary, and nutritional aspects of fermented foods and beverages. This major prepares students for employment in the fermented food and beverage industries in such roles as product development, processing, quality assurance and control, sensory evaluation, packaging, distribution, and plant management. Students enrolled in this major have the opportunity to participate in industry activities to increase their practical understanding of fermented food and beverage production processing methods and specific techniques.

Learning Outcomes

Students will demonstrate:

- Ability to integrate biological and chemical processes to quality and stability of fermented foods, and to critique and effectively communicate the relationships among processing of fermented foods, nutrition, and food safety.
- Discipline specific knowledge of the skills and competencies needed in fermentation science and technology. Examples include knowledge of food chemistry, sensory evaluation of fermented products, brewing processes, refining and packaging technology, food production management, and fermentation microbiology.
- Understanding of classification, production, financial aspects, consumption, and service of controlled beverages, including effective management of facilities and people with emphasis on safe service training and management.
- Competent application of science, history, culture, safety, health, and nutrition dimensions of fermented foods and beverages.

Potential Occupations

Partnerships with industry help provide field experience and internships for majors in Fermentation Science and Technology. The food industry is the largest in the world and fermentation science is a rapidly emerging area so the future is promising. Examples of careers include fermentation scientist, food scientist, food technologist, food safety specialist, brewer, biotechnologist, quality control analyst, sensory analyst, food microbiologist, or entrepreneur.

Requirements

Effective Fall 2015

Freshman

Select one group from the following:

Group A:

- BZ 110 Principles of Animal Biology (GT-SC2) 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) 3A

Group B:

- BZ 110 Principles of Animal Biology (GT-SC2) 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) 3A
LIFE 102 Attributes of Living Systems (GT-SC1) 3A

Select one group from the following: 5-8

**Group A:**
CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A

**Group B:**
CHEM 111 General Chemistry I (GT-SC2) 3A
CHEM 112 General Chemistry Lab I (GT-SC1) 3A
CHEM 113 General Chemistry II

CO 150 College Composition (GT-CO2) 1A 3
FSHN 150 Survey of Human Nutrition 3
MATH 117 College Algebra in Context I (GT-MA1) 1B 1
MATH 118 College Algebra in Context II (GT-MA1) 1B 1
MATH 124 Logarithmic and Exponential Functions (GT-MA1) 1B 1
MATH 125 Numerical Trigonometry (GT-MA1) 1B 1
SOC 100 General Sociology (GT-SS3) 3C 3

Total Credits 28-31

**Sophomore**

BUS 150 or CS 110 Business Computing Concepts and Applications 3-4
Personal Computing

CHEM 245 Fundamentals of Organic Chemistry 4

CHEM 246 Fundamentals of Organic Chemistry Laboratory 1

FTEC 210 Science of Food Fermentation 3

LIFE 205 Microbial Biology 3

LIFE 206 Microbial Biology Laboratory 2

PH 121 General Physics I (GT-SC1) 3A 5

SPCM 200 Public Speaking 3

Foundations and Perspectives 3B, 3D, 3E 6

Total Credits 30-31

**Junior**

BC 351 Principles of Biochemistry 4

Select one course from the following: 3

CO 300 Writing Arguments (GT-CO3) 2

CO 301B Writing in the Disciplines: Sciences (GT-CO3) 2

CO 301C Writing in the Disciplines: Social Sciences (GT-CO3) 2

JTC 300 Professional and Technical Communication (GT-CO3) 2

FTEC 350 Fermentation Microbiology 4B 2

FTEC 360 Brewing Processes 4A 3

FTEC 447 Food Chemistry 2

FTEC 460 Brewing Science and Technology 3

MIP 334 Food Microbiology 3

RRM 330 Alcohol Beverage Control and Management 2

Electives (See list below) 7-11

Total Credits 29-33

**Senior**

FTEC 400 Food Safety 3

FTEC 422 or 430 Brewing Analysis and Quality Control
Sensory Evaluation of Fermented Products 2
FTEC 440  Refining and Packaging Technology  2
FTEC 465  Food Production Management  2
FTEC 487 or 495  Internship  3
        Independent Study
FTEC 492  Seminar: Fermentation Science and Food Safety  4C  2
FTEC 496A or 496B  Group Study Fermentation Science: Current Issues  2
        Group Study Fermentation Science: Functional Foods in Health
STAT 201 or 204  General Statistics  3
        Statistics for Business Students
Electives (See list below)  10
Total Credits  29

Program Total Credits:  120

Department Elective Possibilities

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<th>Code</th>
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<td>Food-From Farm to Table</td>
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<td>FTEC 495</td>
<td>Independent Study</td>
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<td>HORT 277</td>
<td>Introduction to Enology</td>
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<td>HORT 452</td>
<td>Viticulture-Grape Production</td>
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<td>HORT 462</td>
<td>Viticulture Practices in Grape Production</td>
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<td>HORT 477</td>
<td>Enology-History and Winemaking</td>
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<tr>
<td>MATH 126</td>
<td>Analytic Trigonometry (GT-MA1)</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>or MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<td>MGT 430</td>
<td>Leadership and Social Responsibility</td>
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<td>RRM 400</td>
<td>Food and Society</td>
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</tbody>
</table>

1  Students may select from Department Elective Possibilities or may select any course as a free elective. Select enough elective credits to bring the program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1

Select one group from the following:

Group A:
- BZ 110  Principles of Animal Biology (GT-SC2)
- BZ 111  Animal Biology Laboratory (GT-SC1)

Group B:
- LIFE 102  Attributes of Living Systems (GT-SC1)
- FSHN 150  Survey of Human Nutrition
- MATH 117  College Algebra in Context I (GT-MA1)
- MATH 118  College Algebra in Context II (GT-MA1)
- MATH 124  Logarithmic and Exponential Functions (GT-MA1)

Foundations and Perspectives
- CHEM 111, CHEM 112, CHEM 113 sequence

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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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**Total Credits: 13**

**Semester 2**

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Select one group from the following: 3-5

**Group A:**

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**Group B:**

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<td>MATH 125</td>
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**Foundations and Perspectives**

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**Total Credits: 15**

**Sophomore**

**Semester 3**

Select one course from the following: 3-4

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<tbody>
<tr>
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<td>Business Computing Concepts and Applications</td>
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<td>CS 110</td>
<td>Personal Computing</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>FTEC 210</td>
<td>Science of Food Fermentation</td>
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**Foundations and Perspectives**

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**Total Credits: 14**

**Semester 4**

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<td>Microbial Biology</td>
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<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
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<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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**Foundations and Perspectives**

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<th>Credits</th>
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**Total Credits: 16**

**Junior**

**Semester 5**

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<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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Select one course from the following: 3

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<th>Credits</th>
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<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>FTEC 360</td>
<td>Brewing Processes</td>
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<td>MIP 334</td>
<td>Food Microbiology</td>
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<td>RRM 330</td>
<td>Alcohol Beverage Control and Management</td>
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**Total Credits: 17**

**Semester 6**

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<tr>
<td>FTEC 350</td>
<td>Fermentation Microbiology</td>
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<td>FTEC 447</td>
<td>Food Chemistry</td>
<td>X</td>
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<tr>
<td>FTEC 460</td>
<td>Brewing Science and Technology</td>
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(Students must be 21 yrs old.)

**Electives (See Department List)**

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<tr>
<th>Course Code</th>
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<th>Critical</th>
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<th>Credits</th>
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**Total Credits: 16**
Major in Hospitality Management

The Hospitality Management major combines courses in food service, lodging, event planning, nutrition, and business to provide students with a strong skill set for entry into hospitality professions. Elective credits allow students to take courses in areas of interest to enhance their education. The curriculum has a strong emphasis on management skills required for success in the hospitality industry.

The Hospitality Management program maintains strong ties with the foodservice, lodging, and event planning industries locally, state-wide, and nationally to connect graduates with a wide variety of employment opportunities in the expanding commercial and non-commercial segments of the hospitality management industry. The hospitality industry is the second largest employer in Colorado and the United States. The department oversees internships in the industry and aids in job placement upon graduation.

Learning Outcomes

Students will demonstrate:

- A conceptual understanding and systems approach to the business of hospitality management.
- The ability to make logical decisions by organizing, analyzing, and interpreting information and formulating rational solutions in a hospitality business environment.
- The knowledge and skills to successfully manage a hospitality operation, including allocating resources such as time, labor, and material inputs to achieve customer satisfaction.
- An understanding of the managerial functions of planning, organizing, directing, staffing, controlling, and budgeting in various hospitality environments.
- The behaviors of effective, ethical leaders by demonstrating the fundamental principles of leadership in a hospitality business environment.

Potential Occupations

Participation in the experiential learning laboratory, The Aspen Grille, and internship opportunities are highly recommended to enhance practical training and development. The hospitality industry encompasses careers in restaurants, hotels, resorts, spas, event venues, catering, breweries and wineries, bed and breakfast inns, ski areas, business and industry dining venues, hospitals, correctional facilities, and military facilities in the United States and around the world.

Examples of careers include, but are not limited to: restaurant managers, caterers, event planners, wedding planners, banquet managers, hotel sales and marketing, hotel guest operations, hospitality real estate acquisition, hotel manager, food writing and media, brewery hospitality operations, commercial wine and liquor sales, chef, purchasing agent, conference coordinator, guest service agent, tourist attraction manager, spa operations manager, housekeeping manager, time share sales and marketing, bed & breakfast owner/manager, travel agent, school food service manager, hospitality food and equipment sales representative, health inspector, hospital food service manager, food importer, and country club manager.

Requirements
## Effective Fall 2015

### Freshman

Select one group from the following:

<table>
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<tr>
<th>Group A:</th>
<th>AUCC</th>
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<tr>
<td>BZ 110 Principles of Animal Biology (GT-SC2)</td>
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<tr>
<td>BZ 111 Animal Biology Laboratory (GT-SC1)</td>
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<th>Group B:</th>
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<td>BZ 120 Principles of Plant Biology (GT-SC1)</td>
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<td>CO 150 College Composition (GT-CO2)</td>
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<tr>
<td>CS 110 Personal Computing</td>
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<tr>
<td>ECON 202 Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>MATH 117 College Algebra in Context I (GT-MA1)</td>
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<tr>
<td>MATH 118 College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124 Logarithmic and Exponential Functions (GT-MA1)</td>
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<tr>
<td>NRRT 270 Principles of Natural Resource Tourism</td>
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Select one from the following:

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<td>PSY 100 General Psychology (GT-SS3)</td>
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<tr>
<td>SOC 100 General Sociology (GT-SS3)</td>
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<tr>
<td>RRM 101 Hospitality Industry</td>
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Total Credits 29

### Sophomore

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<td>BUS 205 Legal and Ethical Issues in Business</td>
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<td>CHEM 107 Fundamentals of Chemistry (GT-SC2)</td>
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<td>ECON 204 Principles of Macroeconomics (GT-SS1)</td>
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<td>RRM 200 Hotel Operations</td>
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<td>RRM 310 Food Service Systems-Operations</td>
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<td>RRM 340 Restaurant Operations</td>
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<td>SPCM 200 Public Speaking</td>
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<td>STAT 204 Statistics for Business Students</td>
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Total Credits 32

### Junior

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<td>FSHN 301 Food Principles and Applications Laboratory</td>
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<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
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<td>MGT 305 Fundamentals of Management</td>
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<td>MGT 310 or RRM 312 Human Resource Management</td>
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<td>MGT 310 or RRM 312 Hospitality Human Resource Management</td>
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<td>MKT 305 Fundamentals of Marketing</td>
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<td>RRM 311 Food Service Systems-Production and Purchasing</td>
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Electives

Total Credits 31
Senior

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<td>FTEC 400</td>
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<td>RRM 400</td>
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<td>RRM 492</td>
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<td>Electives</td>
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Total Credits: 28

Program Total Credits: 120

1 Select one course each from the list in category 3D and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC). A total of 12 credits must be selected.

2 Select enough elective credits to bring the program total to 120, of which a minimum of 42 credits must be upper-division (300- to 400-level). At least 3 elective credits must be upper-division.

Major Completion Map

Distinctive Requirements for Degree Program:
Students should maintain 2.500 GPA by the end of Sophomore year. Students may substitute RRM 415 for RRM 340, and should discuss their desired choice with faculty or advisor the end of Freshman year. Hospitality Management students may also take RRM 487 Hospitality Internship, or RRM 386 Work Practicum which requires attendance at an internship meeting by end of Sophomore year.

Freshman

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Total Credits: 15

Select one group from the following:

Group A:
- BZ 110 Principles of Animal Biology (GT-SC2) X 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) X 3A

Group B:
- BZ 120 Principles of Plant Biology (GT-SC1) X 3A

CS 110 Personal Computing X 4

ECON 202 Principles of Microeconomics (GT-SS1) X 3C 3

NRRT 270 Principles of Natural Resource Tourism X 3

Total Credits: 14

Sophomore

<table>
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<th>Semester 3</th>
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<td>Legal and Ethical Issues in Business</td>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>X</td>
<td>3A</td>
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<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
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<td>RRM 200</td>
<td>Hotel Operations</td>
<td>X</td>
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<tr>
<td>RRM 340</td>
<td>Restaurant Operations</td>
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Total Credits: 17
Major in Nutrition and Food Science

Public interest regarding the importance of nutrition to health and fitness is at a high level and increasing. The Nutrition and Food Science major involves integration of the biological, medical, and social sciences and their application to the improvement of human nutrition and fitness, prevention of chronic disease, and improved quality of life. The major is both science and human service oriented.

Nutrition and Food Science graduates gain a scientific understanding of the principles of human nutrition, the role of nutrition in the prevention and management of disease, delivery of nutritional care, and the principles of nutrition assessment and food preparation. Additionally, graduates know the techniques of interviewing, counseling, information management, and effective communication.

Four concentrations are currently available in this major – Dietetics and Nutrition Management, Nutrition and Fitness, Nutritional Sciences (pre-med), and Food Safety and Nutrition.

Learning Outcomes

Students will demonstrate:
Concentrations and Options

Nutrition and Food Science major.
Students may choose from among four concentrations under the Nutrition and Food Sciences Education concentration allows students to combine their interests in nutrition, wellness/health, food science, culinary arts, and/or catering with teaching. Family and Consumer Sciences Education students take course work in the Department of Food Science and Human Nutrition, Design and Merchandising, and Human Development and Family Studies as well as complete an education sequence which qualifies them for a secondary teaching license. The demand for secondary family and consumer sciences teachers exceeds the supply in Colorado as well as nationally. Therefore, job placement is extremely high with starting salaries in the $34,000-$37,000 range for a nine-month teaching position.

Students may choose from among four concentrations under the Nutrition and Food Science major.

Concentrations and Options

- Dietetics and Nutrition Management Concentration
- Accredited Didactic Program Option
- Childhood Nutrition Option
- Gerontology Nutrition Option
- Food Safety and Nutrition Concentration
- Nutrition and Fitness Concentration
- Nutritional Sciences Concentration

Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration

The Dietetics and Nutrition Management concentration provides a broad background in clinical nutrition, health promotion, and food service management. The science-based curriculum includes nutritional assessment, application of food theory, and course work focusing on nutritional counseling and medical nutrition therapy. The concentration is designed to prepare students for a dietetic internship and a professional career in medical nutrition therapy or community-based nutrition programs. The Accredited Didactic Program option of the Dietetics and Nutrition Management concentration is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND). This concentration is open to all students interested in becoming registered dietitians. However, students must qualify to continue in the Accredited Didactic Program option by meeting the prerequisites for the Dietetic Practice Seminar (FSHN 392) in their junior year. These prerequisites are an overall GPA of 3.0 and grades of “B” or better in FSHN 150, FSHN 300/FSHN 301, and basic sciences (CHEM 107/CHEM 108, or CHEM 111, CHEM 112, CHEM 113; CHEM 245, CHEM 246; LIFE 102 or BZ 110, BZ 111; BMS 300, BMS 302, FSHN 150; FSHN 300, FSHN 301). Students who do not meet these requirements are encouraged to exercise their repeat/delete options in those courses which are lower than a “B” grade if they wish to be considered for the Accredited Didactic Program option. The Childhood Nutrition option prepares students for supervisory positions in the school nutrition program. The Gerontology Nutrition option prepares students for supervisory positions in food service management in long-term care and rehabilitation or for working with community programs providing nutrition services to older individuals.

Options

- Accredited Didactic Program Option
- Childhood Nutrition Option
- Gerontology Nutrition Option

Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Accredited Didactic Program Option

Requirements
Effective Fall 2015

Admission to the Accredited Didactic Program requires a minimum 3.0 GPA and grades of B or better in LIFE 102, CHEM 107 and CHEM 108, or CHEM 111, CHEM 112, and CHEM 113; CHEM 245, CHEM 246, BMS 300, BMS 302, FSHN 150, FSHN 300, and FSHN 301.¹

Freshman

Select one group from the following:

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<tr>
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<th>Course</th>
<th>Description</th>
<th>AUC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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Select one group from the following:

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<tr>
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<th>Course</th>
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<th>Credits</th>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
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<td>B</td>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<td>College Composition (GT-CO2)</td>
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<tr>
<td></td>
<td>BUS 150 or CS 110</td>
<td>Business Computing Concepts and Applications</td>
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<td></td>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
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<td></td>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1B</td>
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<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
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<td>Foundations and Perspectives²</td>
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Total Credits 30-34

Sophomore

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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>FSHN 300</td>
<td>Food Principles and Applications</td>
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<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
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<td>OT 215</td>
<td>Medical Terminology</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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Total Credits 32

Junior

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<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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Select one course from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>2</td>
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</table>
### Major Completion Map

#### Distinctive Requirements for Degree Program:

Admission to the Accredited Didactic Program requires a minimum 3.00 GPA and grades of B or better in LIFE 102, CHEM 107 and CHEM 108, or CHEM 111, CHEM 112, and CHEM 113; CHEM 245, CHEM 246, BMS 300, BMS 302, FSHN 150, FSHN 300, and FSHN 301. Students must also have 2.800 cumulative GPA by 60 credits to remain in Dietetics.

---

### Freshman

#### Semester 1

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<tbody>
<tr>
<td>BUS 150</td>
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<td>CS 110</td>
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<td>BZ 110</td>
<td><strong>X</strong></td>
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<td>3A</td>
<td>3</td>
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<tr>
<td>BZ 111</td>
<td><strong>X</strong></td>
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<tr>
<td>LIFE 102</td>
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<td>FSHN 150</td>
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<td>MATH 117</td>
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<td>1B</td>
<td>1</td>
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<tr>
<td>MATH 118</td>
<td><strong>X</strong></td>
<td></td>
<td>1B</td>
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</tbody>
</table>

---

1. This program is accredited by ACEND and prepares students to be eligible to apply for dietetic internships. Application to the program is made in the summer preceding the last four semesters of the program.

2. Select one course each from the lists in categories 3D and 3E, and two courses from category 3B of the All-University Core Curriculum (AUCC), for a total of 12 credits.

3. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>X</td>
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<td>1B</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td></td>
<td></td>
<td>3C</td>
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<tr>
<td></td>
<td>If taking CHEM 111, CHEM 112, CHEM 113 sequence</td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>X</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>X</td>
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<td>3A</td>
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<tr>
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### Semester 2

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<td><strong>Select one group from the following:</strong></td>
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<td><strong>3-5</strong></td>
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<tr>
<td></td>
<td><strong>Group A:</strong></td>
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<td></td>
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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>3A</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>X</td>
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<td>3A</td>
</tr>
<tr>
<td></td>
<td><strong>Group B:</strong></td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>X</td>
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<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
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<td>3C</td>
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<td></td>
<td><strong>Foundations and Perspectives</strong></td>
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<td>3B, 3D, 3E</td>
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### Sophomore

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<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>FSHN 300</td>
<td>Food Principles and Applications</td>
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<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
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<td>OT 215</td>
<td>Medical Terminology</td>
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<td></td>
<td><strong>Foundations and Perspectives</strong></td>
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<td>3B, 3D, 3E</td>
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### Semester 4

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<td>Principles of Human Physiology</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td><strong>Foundations and Perspectives</strong></td>
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<td>3B, 3D, 3E</td>
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<td><strong>Elective</strong></td>
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### Junior

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<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>FSHN 350</td>
<td>Human Nutrition</td>
<td>X</td>
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<td>FSHN 386A</td>
<td>Practicum: Food Service Management</td>
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<td>FSHN 392</td>
<td>Dietetic Practice Seminar</td>
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<td>RRM 310</td>
<td>Food Service Systems-Operations</td>
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### Semester 6

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<td>Nutrition Assessment</td>
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<td>LIFE 205</td>
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<td>Microbial Biology Laboratory</td>
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<td>MGT 305</td>
<td>Fundamentals of Management</td>
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BC 351 must be completed by the end of Semester 6.

Total Credits: 16

**Senior**

**Semester 7**

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<td>FSHN 450 Medical Nutrition Therapy</td>
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<td>FSHN 451 Community Nutrition</td>
<td>X</td>
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<td>FSHN 455 Food Systems: Impact on Health/Food Security</td>
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<td>FSHN 459 Nutrition in the Life Cycle</td>
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Total Credits: 15

**Semester 8**

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<th>Recommended</th>
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<th>Credits</th>
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<td>FSHN 428 Nutrition Teaching and Counseling Techniques</td>
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<td>FSHN 470 Integrative Nutrition and Metabolism</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits: 11

Program Total Credits: 120

**Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Childhood Nutrition Option**

**Requirements**

**Effective Fall 2014**

**Freshman**

Select one group from the following:

**Group A:**

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<thead>
<tr>
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<td>BZ 111</td>
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Select one group from the following:

**Group A:**

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**Group B:**

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<td>MATH 118</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>PSY 100</td>
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<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
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**Total Credits** 30-34

### Sophomore

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<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
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<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td>4</td>
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<tr>
<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>FSHN 300</td>
<td>Food Principles and Applications</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>OT 215</td>
<td>Medical Terminology</td>
<td>1</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>3</td>
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<tr>
<td>STAT 201 or 204</td>
<td>General Statistics / Statistics for Business Students</td>
<td>3</td>
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**Total Credits** 32

### Junior

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<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>Human Nutrition</td>
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<td>FSHN 360</td>
<td>Nutrition Assessment</td>
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<td>HDFS 310</td>
<td>Infant and Child Development in Context</td>
<td>3</td>
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<td>LIFE 205</td>
<td>Microbial Biology</td>
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<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
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<tr>
<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<td>RRM 310</td>
<td>Food Service Systems-Operations</td>
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<tr>
<td>RRM 311</td>
<td>Food Service Systems-Production and Purchasing</td>
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**Total Credits** 29

### Senior

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<tr>
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<td>Practicum: School Nutrition</td>
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<td>FSHN 428</td>
<td>Nutrition Teaching and Counseling Techniques</td>
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<td>FSHN 450</td>
<td>Medical Nutrition Therapy</td>
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<td>FSHN 451</td>
<td>Community Nutrition</td>
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<td>FSHN 459</td>
<td>Nutrition in the Life Cycle</td>
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<td>FSHN 470</td>
<td>Integrative Nutrition and Metabolism</td>
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<tr>
<td>FSHN 492</td>
<td>Seminar in Dietetics and Nutrition</td>
<td>4C</td>
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<tr>
<td>HDFS 311</td>
<td>Adolescent/Early Adult Development in Context</td>
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Electives

**Total Credits**

20-4

Program Total Credits:

120

1. Select one course each from the lists of courses in categories 3D and 3E, and two courses from category 3B of the All-University Core Curriculum (AUCC), for a total of 12 credits. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>AUCC</th>
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<td>BUS 150  Business Computing Concepts and Applications</td>
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<td>CS 110  Personal Computing</td>
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<td>Select one group from the following:</td>
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<td>BZ 110 Principles of Animal Biology (GT-SC2)</td>
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<td>3A</td>
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<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
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<td>MATH 118 College Algebra in Context II (GT-MA1)</td>
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<td>1B</td>
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<td>MATH 124 Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>1B</td>
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<tr>
<td>PSY 100 General Psychology (GT-SS3)</td>
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<td>3C</td>
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<td>If taking CHEM 111, CHEM 112, CHEM 113 sequence</td>
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<td>CHEM 112 General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 113 General Chemistry II</td>
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<td>SOC 100 General Sociology (GT-SS3)</td>
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<td>3B, 3D, 3E</td>
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### Sophomore

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<td>CHEM 246  Fundamentals of Organic Chemistry Laboratory</td>
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<td>FSHN 300  Food Principles and Applications</td>
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<td>FSHN 301  Food Principles and Applications Laboratory</td>
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<td>OT 215  Medical Terminology</td>
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<td>Foundations and Perspectives</td>
<td>3B, 3D, 3E</td>
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### Semester 4

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<tr>
<td>BMS 302</td>
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<td>SPCM 200</td>
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<td>STAT 201</td>
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<tr>
<td>STAT 204</td>
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Select one course from the following:

- STAT 201 General Statistics
- STAT 204 Statistics for Business Students

Foundations and Perspectives 3B, 3D, 3E 3

**Total Credits** 15

### Junior

#### Semester 5

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Select one course from the following:

- CO 300 Writing Arguments (GT-CO3)
- CO 301B Writing in the Disciplines: Sciences (GT-CO3)
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)
- JTC 300 Professional and Technical Communication (GT-CO3)

- FSHN 350 Human Nutrition X 4C 3
- RRM 310 Food Service Systems-Operations X 3

PSY 100 must be completed by the end of Semester 5.

**Total Credits** 13

#### Semester 6

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<td>LIFE 205</td>
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<td>3</td>
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<tr>
<td>LIFE 206</td>
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<td>X</td>
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<td>MGT 305</td>
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**Total Credits** 16

### Senior

#### Semester 7

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<td>FSHN 451</td>
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<td>FSHN 459</td>
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<td>HDFS 311</td>
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BC 351 must be completed by the end of Semester 7.

**Total Credits** 14

#### Semester 8

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<td>FSHN 470</td>
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<td>FSHN 492</td>
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</table>

Electives X 4

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

**Total Credits** 15

**Program Total Credits:** 120
### Major in Nutrition and Food Science, Dietetics and Nutrition Management Concentration, Gerontology Nutrition Option

#### Requirements

**Effective Fall 2014**

**Freshman**

Select one group from the following:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 110 Principles of Animal Biology (GT-SC2)</td>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
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<td>3A</td>
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Select one group from the following:

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<tr>
<th>Group A</th>
<th>Group B</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 107 Fundamentals of Chemistry (GT-SC2)</td>
<td>CHEM 111 General Chemistry I (GT-SC2)</td>
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**Sophomore**

<table>
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<th>Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>3B, 3D, 3E</td>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
<td>2</td>
<td>3B, 3D, 3E</td>
</tr>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td>4</td>
<td>3B, 3D, 3E</td>
</tr>
<tr>
<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>3B, 3D, 3E</td>
</tr>
<tr>
<td>FSHN 300</td>
<td>Food Principles and Applications</td>
<td>3</td>
<td>3B, 3D, 3E</td>
</tr>
<tr>
<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
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<td>3B, 3D, 3E</td>
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<td>OT 215</td>
<td>Medical Terminology</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>3B, 3D, 3E</td>
</tr>
<tr>
<td>STAT 201 or 204</td>
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Total Credits 30-34
### Junior

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<tbody>
<tr>
<td>AHS 201</td>
<td>Principles of Biochemistry</td>
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<tr>
<td>BC 351</td>
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Select one course from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>2</td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>FSHN 350</td>
<td>Human Nutrition</td>
<td>4C</td>
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<tr>
<td>FSHN 360</td>
<td>Nutrition Assessment</td>
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<tr>
<td>LIFE 205</td>
<td>Microbial Biology</td>
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<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
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<tr>
<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<tr>
<td>RRM 310</td>
<td>Food Service Systems-Operations</td>
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<tr>
<td>RRM 311</td>
<td>Food Service Systems-Production and Purchasing</td>
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<td><strong>Total Credits</strong></td>
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### Senior

<table>
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<tr>
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<tbody>
<tr>
<td>FSHN 386B</td>
<td>Practicum: Gerontology</td>
<td>3</td>
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<tr>
<td>FSHN 428</td>
<td>Nutrition Teaching and Counseling Techniques</td>
<td>3</td>
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<td>FSHN 450</td>
<td>Medical Nutrition Therapy</td>
<td>4B</td>
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<tr>
<td>FSHN 451</td>
<td>Community Nutrition</td>
<td>4A</td>
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<td>FSHN 459</td>
<td>Nutrition in the Life Cycle</td>
<td>3</td>
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<tr>
<td>FSHN 470</td>
<td>Integrative Nutrition and Metabolism</td>
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<tr>
<td>FSHN 492</td>
<td>Seminar in Dietetics and Nutrition</td>
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<tr>
<td>HDFS 312</td>
<td>Adult Development-Middle Age and Aging</td>
<td>3</td>
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<tr>
<td>HES 444</td>
<td>Successful Aging: Role of Physical Activity</td>
<td>2</td>
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<tr>
<td>Electives²</td>
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**Program Total Credits:** 120

1. Select one course each from the lists in categories 3D and 3E, and two courses from category 3B of the All-University Core Curriculum (AUCC), for a total of 12 credits.

2. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Students may complete this major/option at 120 credits by selecting CHEM 107, CHEM 108, and BUS 150 in the freshman year. Students wishing to complete the Gerontology Interdisciplinary Minor should consult with advisors about course selection. Completion of the major/option and the minor will exceed the 120 credit total.

**Major Completion Map**

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td></td>
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<td>3-4</td>
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</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
</tr>
<tr>
<td>CS 110</td>
<td>Personal Computing</td>
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</table>

Select one group from the following:

**Group A:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>X</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td></td>
<td>3A</td>
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<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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<td>3A</td>
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</table>

**Group B:**
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
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<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>X</td>
<td></td>
<td>1B</td>
<td>1</td>
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<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>X</td>
<td></td>
<td>1B</td>
<td>1</td>
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<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>X</td>
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<td>1B</td>
<td>1</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td></td>
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<td>3C</td>
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If taking CHEM 111, CHEM 112, CHEM 113 sequence

<table>
<thead>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>X</td>
<td>3A</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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Total Credits: 16

**Semester 2**

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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
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Select one group from the following: 3-5

**Group A:**

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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>X</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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**Group B:**

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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
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Foundations and Perspectives: 3B, 3D, 3E 3

Total Credits: 14

**Sophomore**

**Semester 3**

<table>
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<tr>
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<tbody>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<tr>
<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
<td>X</td>
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<td></td>
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<tr>
<td>FSHN 300</td>
<td>Food Principles and Applications</td>
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<tr>
<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
<td>X</td>
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<tr>
<td>OT 215</td>
<td>Medical Terminology</td>
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Foundations and Perspectives: 3B, 3D, 3E 6

Total Credits: 17

**Semester 4**

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<tr>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td>X</td>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
<td>X</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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Select one course from the following: 3

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<tr>
<td>STAT 201</td>
<td>General Statistics</td>
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<td>STAT 204</td>
<td>Statistics for Business Students</td>
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Foundations and Perspectives: 3B, 3D, 3E 3

Total Credits: 15

**Junior**

**Semester 5**

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<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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Select one course from the following: 3

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<th>Course Code</th>
<th>Course Title</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td></td>
<td></td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>FSHN 350</td>
<td>Human Nutrition</td>
<td>X</td>
<td>4C</td>
<td></td>
<td>3</td>
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<tr>
<td>RRM 310</td>
<td>Food Service Systems-Operations</td>
<td>X</td>
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PSY 100 must be completed by the end of Semester 5.

Total Credits: 13
### Semester 6

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<td>FSHN 360 Nutrition Assessment</td>
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<td>X</td>
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<td>LIFE 205 Microbial Biology</td>
<td></td>
<td>X</td>
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<td>LIFE 206 Microbial Biology Laboratory</td>
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<td>MGT 305 Fundamentals of Management</td>
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<td>RRM 311 Food Service Systems-Production and Purchasing</td>
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### Senior Semester 7

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<td>FSHN 450 Medical Nutrition Therapy</td>
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<td>FSHN 451 Community Nutrition</td>
<td>X</td>
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<td>4A</td>
<td>3</td>
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<td>FSHN 459 Nutrition in the Life Cycle</td>
<td>X</td>
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<td>3</td>
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<td>HES 444 Successful Aging: Role of Physical Activity</td>
<td>X</td>
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<td>BC 351 must be completed by the end of Semester 7.</td>
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### Semester 8

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<tr>
<td>FSHN 386B Practicum: Gerontology</td>
<td>X</td>
<td></td>
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<td>FSHN 428 Nutrition Teaching and Counseling Techniques</td>
<td>X</td>
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<td>FSHN 470 Integrative Nutrition and Metabolism</td>
<td>X</td>
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<tr>
<td>FSHN 492 Seminar in Dietetics and Nutrition</td>
<td>X</td>
<td></td>
<td>4C</td>
<td>2</td>
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<tr>
<td>HDFS 312 Adult Development-Middle Age and Aging</td>
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<td></td>
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<tr>
<td>Elective</td>
<td>X</td>
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<tr>
<td><strong>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</strong></td>
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<td><strong>Total Credits</strong></td>
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</table>

**Program Total Credits:** 120

### Major in Nutrition and Food Science, Food Safety and Nutrition Concentration

The Food Safety and Nutrition concentration blends a strong science base with courses in food science, food safety, food microbiology, and nutrition. The curriculum prepares students for employment in the food industry or in government in such areas as quality assurance, product development, research, food inspection, sensory evaluation, and consumer education. The concentration also provides an excellent background for a graduate program. Students in the concentration are encouraged to participate in the interdisciplinary minor in Food Science/ Safety to further their understanding of the continuum of responsibility shared through the food system in ensuring that food is safe and healthful. By addition of several elective courses, students can also meet ACEND (http://www.eatrightacend.org/ACEND) course requirements.

### Requirements

**Effective Spring 2016**

**Freshman**

Select one group from the following:

**Group A:**
- BZ 110 Principles of Animal Biology (GT-SC2) 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) 3A

**Group B:**
- LIFE 102 Attributes of Living Systems (GT-SC1) 3A

Select one group from the following:

**Group A:**
- CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
- CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A

**Group B:**
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
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<tr>
<td>FSHN 125 or 150</td>
<td>Food and Nutrition in Health</td>
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<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>Foundations and Perspectives¹</td>
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<td>3B, 3D, 3E</td>
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**Sophomore**

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<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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</tr>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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</tr>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td>4</td>
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<tr>
<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BUS 150 or CS 110</td>
<td>Business Computing Concepts and Applications</td>
<td>3-4</td>
</tr>
<tr>
<td>FSHN 300</td>
<td>Food Principles and Applications</td>
<td>3</td>
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<tr>
<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
<td>2</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>3B, 3D, 3E</td>
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**Junior**

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<tr>
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<tbody>
<tr>
<td>FSHN 350</td>
<td>Human Nutrition</td>
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<tr>
<td>FTEC 447</td>
<td>Food Chemistry</td>
<td>4B</td>
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<tr>
<td>LIFE 205</td>
<td>Microbial Biology</td>
<td>3</td>
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<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
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**Senior**

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<tr>
<th>Course Code</th>
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<tr>
<td>FTEC 400</td>
<td>Food Safety</td>
<td>3</td>
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<td>FTEC 430</td>
<td>Sensory Evaluation of Fermented Products</td>
<td>4A</td>
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<tr>
<td>FTEC 460</td>
<td>Brewing Science and Technology</td>
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<tr>
<td>FTEC 492</td>
<td>Seminar: Fermentation Science and Food Safety</td>
<td>4C</td>
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<tr>
<td>MIP 334</td>
<td>Food Microbiology</td>
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<td>MIP 335</td>
<td>Food Microbiology Laboratory</td>
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<tr>
<td>STAT 201 or 204</td>
<td>General Statistics for Business Students</td>
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<td>STAT 201 or 204</td>
<td>Statistics for Business Students</td>
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Electives

Total Credits: 30-35
Program Total Credits: 120

Advanced Courses

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<td>ACT 205</td>
<td>Fundamentals of Accounting</td>
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<td>ANEQ 360</td>
<td>Principles of Meat Science</td>
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<td>ANEQ 460</td>
<td>Meat Safety</td>
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<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<td>BTEC 306/BIOM 306</td>
<td>Bioprocess Engineering</td>
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<td>ERHS 220</td>
<td>Environmental Health</td>
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<td>ERHS 332</td>
<td>Principles of Epidemiology</td>
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<tr>
<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
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<td>MATH 126</td>
<td>Analytic Trigonometry (GT-MA1)</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>or MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<td>PH 121</td>
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<td>RRM 330</td>
<td>Alcohol Beverage Control and Management</td>
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<td>RRM 400</td>
<td>Food and Society</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
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<td>SOCR 430</td>
<td>Applications of Plant Biotechnology</td>
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</table>

1 Select one course each from the list in category 3D, and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC).

2 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1

Select one group from the following:

Group A:

BZ 110 Principles of Animal Biology (GT-SC2) X 3A
BZ 111 Animal Biology Laboratory (GT-SC1) X 3A

Group B:

LIFE 102 Attributes of Living Systems (GT-SC1) X 3A

Select one course from the following:

FSHN 125 Food and Nutrition in Health X
FSHN 150 Survey of Human Nutrition X
MATH 117 College Algebra in Context I (GT-MA1) X 1B 1
MATH 118 College Algebra in Context II (GT-MA1) X 1B 1
MATH 124 Logarithmic and Exponential Functions (GT-MA1) X 1B 1

Total Credits

Foundations and Perspectives

If taking CHEM 111, CHEM 112, CHEM 113 sequence

CHEM 111 General Chemistry I (GT-SC2) X 3A
CHEM 112 General Chemistry Lab I (GT-SC1) X 3A

Total Credits

Semester 2

CO 150 College Composition (GT-CO2) X 1A 3

Select one group from the following:
Group A:
- CHEM 107: Fundamentals of Chemistry (GT-SC2)  X  3A
- CHEM 108: Fundamentals of Chemistry Laboratory (GT-SC1)  X  3A

Group B:
- CHEM 113: General Chemistry II  X
- FTEC 110: Food-From Farm to Table  3
- SOC 100: General Sociology (GT-SS3)  3C  3

Total Credits  14

**Sophomore**

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
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<tbody>
<tr>
<td>BUS 150: Business Computing Concepts and Applications</td>
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<td>3-4</td>
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<tr>
<td>CS 110: Personal Computing</td>
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<td>4</td>
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<tr>
<td>CHEM 245: Fundamentals of Organic Chemistry</td>
<td>X</td>
<td></td>
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<td>4</td>
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<tr>
<td>CHEM 246: Fundamentals of Organic Chemistry Laboratory</td>
<td>X</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>FSHN 300: Food Principles and Applications</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>FSHN 301: Food Principles and Applications Laboratory</td>
<td>X</td>
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<tr>
<td>Foundations and Perspectives</td>
<td>3B, 3D, 3E</td>
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Total Credits  16

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<tbody>
<tr>
<td>BMS 300: Principles of Human Physiology</td>
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<td>Select one course from the following:</td>
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<tr>
<td>CO 300: Writing Arguments (GT-CO3)</td>
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<td>CO 301B: Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>CO 301C: Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<td>JTC 300: Professional and Technical Communication (GT-CO3)</td>
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<td>SPCM 200: Public Speaking</td>
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Total Credits  13

**Junior**

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<th>Semester 5</th>
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<tbody>
<tr>
<td>FSHN 350: Human Nutrition</td>
<td>X</td>
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<tr>
<td>Upper-Division FSHN/RRM courses</td>
<td>X</td>
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<td>Advanced Courses (See List on Concentration Requirements Tab)</td>
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Total Credits  13

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<tbody>
<tr>
<td>FTEC 447: Food Chemistry</td>
<td>X</td>
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<td>LIFE 205: Microbial Biology</td>
<td>X</td>
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<tr>
<td>LIFE 206: Microbial Biology Laboratory</td>
<td>X</td>
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<td></td>
<td>2</td>
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<td>Advanced Courses (See List on Concentration Requirements Tab)</td>
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<td>Elective</td>
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Total Credits  14

**Senior**

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<thead>
<tr>
<th>Semester 7</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>FTEC 400: Food Safety</td>
<td>X</td>
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<tr>
<td>FTEC 460 (Must be 21 yrs old): Brewing Science and Technology</td>
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<td>3</td>
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<tr>
<td>MIP 334: Food Microbiology</td>
<td></td>
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<td>3</td>
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<td>MIP 335: Food Microbiology Laboratory</td>
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<tr>
<td>Upper-Division FSHN/RRM Course</td>
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<td>Advanced Courses (See List on Concentration Requirements Tab)</td>
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Total Credits  18
Colorado State University 623

Semester 8

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<tr>
<td>FTEC 430</td>
<td>Sensory Evaluation of Fermented Products</td>
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<td>4A</td>
<td>2</td>
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<tr>
<td>FTEC 492</td>
<td>Seminar: Fermentation Science and Food Safety</td>
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<td>4C</td>
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</table>

Select one course from the following:

- STAT 201  General Statistics
- STAT 204  Statistics for Business Students

Upper-Division FSHN/RRM Course

Electives

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

**Total Credits**: 17

**Program Total Credits**: 120

**Major in Nutrition and Food Science, Nutrition and Fitness Concentration**

The nutrition and fitness concentration prepares students for employment as nutrition and fitness counselors and personal lifestyle coaches in health care settings, commercial establishments, public health settings, or private practice. The curriculum blends a strong science base with course work in exercise science, nutrition, teaching, and counseling. The concentration also provides an excellent background for a graduate program. By the addition of several elective courses, students can meet ACEND didactic course requirements if they meet requirements for FSHN 392.

**Requirements**

**Effective Spring 2014**

**Freshman**

Select one group from the following:

- **Group A**
  - BZ 110 Principles of Animal Biology (GT-SC2)
  - BZ 111 Animal Biology Laboratory (GT-SC1)

- **Group B**
  - LIFE 102 Attributes of Living Systems (GT-SC1)

Select one group from the following:

- **Group A**
  - CHEM 107 Fundamentals of Chemistry (GT-SC2)
  - CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1)

- **Group B**
  - CHEM 111 General Chemistry I (GT-SC2)
  - CHEM 112 General Chemistry Lab I (GT-SC1)
  - CHEM 113 General Chemistry II

- CO 150 College Composition (GT-CO2)

- BUS 150 or CS 110 Business Computing Concepts and Applications
  - Personal Computing

- FSHN 150 Survey of Human Nutrition

- MATH 117 College Algebra in Context I (GT-MA1)
- MATH 118 College Algebra in Context II (GT-MA1)
- MATH 124 Logarithmic and Exponential Functions (GT-MA1)
- PSY 100 General Psychology (GT-SS3)
- SOC 100 General Sociology (GT-SS3)
- Foundations and Perspectives

**Total Credits**: 30-34

**Sophomore**

- BMS 300 Principles of Human Physiology

- **Credits**: 4
### Major in Nutrition and Food Science, Nutrition and Fitness Concentration

<table>
<thead>
<tr>
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<th>Course Title</th>
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<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>FSHN 300</td>
<td>Food Principles and Applications</td>
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<td>FSHN 301</td>
<td>Food Principles and Applications Laboratory</td>
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<td>OT 215</td>
<td>Medical Terminology</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<td><strong>Foundations and Perspectives</strong></td>
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**Junior**

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<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<td>CO 300</td>
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<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>FSHN 350</td>
<td>Human Nutrition</td>
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<td><strong>Select one course from the following:</strong></td>
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<td>FSHN 496A</td>
<td>Group Study in Dietetics and Nutrition: Energy, Weight Management</td>
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<tr>
<td>FSHN 496B</td>
<td>Group Study in Dietetics and Nutrition: Sustainable Food Issues</td>
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<tr>
<td>FSHN 496C</td>
<td>Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease</td>
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<td>FSHN 496D</td>
<td>Group Study in Dietetics and Nutrition: Nutrition for Athletes</td>
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<td>FSHN 496E</td>
<td>Group Study in Dietetics and Nutrition: Food Safety</td>
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<tr>
<td>FSHN 496F</td>
<td>Group Study in Dietetics and Nutrition: Service Marketing</td>
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<tr>
<td>FSHN 496G</td>
<td>Group Study in Dietetics and Nutrition: Food and Consumer Issues</td>
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<tr>
<td>FSHN 496H</td>
<td>Group Study in Dietetics and Nutrition: Public Health and Policy</td>
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<td>FSHN 496I</td>
<td>Group Study in Dietetics and Nutrition: Special Topics</td>
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<td>HES 240</td>
<td>First Aid and Emergency Care</td>
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<td>HES 332F</td>
<td>Techniques of Teaching Individual Sports: Weight Training</td>
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<td>HES 332H</td>
<td>Techniques of Teaching Individual Sports: Aerobics</td>
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<td>HES 403</td>
<td>Physiology of Exercise</td>
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<td>LIFE 205</td>
<td>Microbial Biology</td>
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<td>LIFE 206</td>
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<td>STAT 201 or 204</td>
<td>General Statistics Statistics for Business Students</td>
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**Senior**

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<tr>
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<tr>
<td>FSHN 360</td>
<td>Nutrition Assessment</td>
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<td>FSHN 428</td>
<td>Nutrition Teaching and Counseling Techniques</td>
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<td>FSHN 450</td>
<td>Medical Nutrition Therapy</td>
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<td>FSHN 451</td>
<td>Community Nutrition</td>
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<td>FSHN 459</td>
<td>Nutrition in the Life Cycle</td>
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<td>FSHN 470</td>
<td>Integrative Nutrition and Metabolism</td>
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<td>FSHN 492</td>
<td>Seminar in Dietetics and Nutrition</td>
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<td><strong>Select one course from the following:</strong></td>
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<td>Group Study in Dietetics and Nutrition: Sustainable Food Issues</td>
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<td>FSHN 496C</td>
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<td>FSHN 496D</td>
<td>Group Study in Dietetics and Nutrition: Nutrition for Athletes</td>
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FSHN 496E  Group Study in Dietetics and Nutrition: Food Safety
FSHN 496F  Group Study in Dietetics and Nutrition: Service Marketing
FSHN 496G  Group Study in Dietetics and Nutrition: Food and Consumer Issues
FSHN 496H  Group Study in Dietetics and Nutrition: Public Health and Policy
FSHN 496I  Group Study in Dietetics and Nutrition: Special Topics
HES 405  Exercise Testing Instrumentation  2
Electives²  3-7

Total Credits  27-31

Program Total Credits:  120

¹ Select one course each from the list in category 3D and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC).
² Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1

Select one course from the following:  3-4

<table>
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<tr>
<th>Critical</th>
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BUS 150  Business Computing Concepts and Applications
CS 110  Personal Computing

Select one group from the following:  4

Group A:

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<th>Critical</th>
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BZ 110  Principles of Animal Biology (GT-SC2)  X  3A
BZ 111  Animal Biology Laboratory (GT-SC1)  X  3A

Group B:

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LIFE 102  Attributes of Living Systems (GT-SC1)  X  3A
FSHN 150  Survey of Human Nutrition  X  3
MATH 117  College Algebra in Context I (GT-MA1)  X  1B  1
MATH 118  College Algebra in Context II (GT-MA1)  X  1B  1
MATH 124  Logarithmic and Exponential Functions (GT-MA1)  X  1B  1
PSY 100  General Psychology (GT-SS3)  3C  3

If taking CHEM 111, CHEM 112, CHEM 113 sequence  5

CHEM 111  General Chemistry I (GT-SC2)  X  3A
CHEM 112  General Chemistry Lab I (GT-SC1)  X  3A

Total Credits  16

Semester 2

Select one group from the following:  3-5

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CO 150  College Composition (GT-CO2)  X  1A  3

Group A:

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CHEM 107  Fundamentals of Chemistry (GT-SC2)  X  3A
CHEM 108  Fundamentals of Chemistry Laboratory (GT-SC1)  X  3A

Group B:

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CHEM 113  General Chemistry II  X
SOC 100  General Sociology (GT-SS3)  3C  3

Foundations and Perspectives  3B, 3D, 3E  3

Total Credits  14

Sophomore

Semester 3

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CHEM 245  Fundamentals of Organic Chemistry  X  4
CHEM 246  Fundamentals of Organic Chemistry Laboratory  X  1
FSHN 300  Food Principles and Applications  X  3
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<td>First Aid and Emergency Care</td>
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<td>HES 332F</td>
<td>Techniques of Teaching Individual Sports: Weight Training</td>
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### Senior

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<td>FSHN 450</td>
<td>Medical Nutrition Therapy</td>
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<td>FSHN 459</td>
<td>Nutrition in the Life Cycle</td>
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Major in Nutrition and Food Science, Nutritional Sciences Concentration

The Nutritional Sciences concentration provides a strong background in natural and biomedical sciences and nutrition, making it an appropriate preparation for graduate study, medical school, or a career in nutritional research, biomedical research, or college teaching. This concentration forms the basis for a pre-medical professional program. By addition of several elective courses, students can meet ACEND course requirements if they meet requirements for FSHN 392.

Requirements

Effective Spring 2014

Freshman

Select one group from the following:

Group A:
BZ 110 Principles of Animal Biology (GT-SC2) 3A
BZ 111 Animal Biology Laboratory (GT-SC1) 3A

Group B:
LIFE 102 Attributes of Living Systems (GT-SC1) 3A
BZ 120 or LIFE 103 Principles of Plant Biology (GT-SC1) 3A
Biology of Organisms-Animals and Plants 4

CHEM 111 General Chemistry I (GT-SC2) 3A
CHEM 112 General Chemistry Lab I (GT-SC1) 3A
CHEM 113 General Chemistry II 3
CHEM 114 General Chemistry Lab II 1
CO 150 College Composition (GT-CO2) 1A

Total Credits 4
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**Sophomore**

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<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
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**Junior**

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<td>BZ 310 or LIFE 210</td>
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<td>Introductory Eukaryotic Cell Biology</td>
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<td>BUS 150 or CS 110</td>
<td>Business Computing Concepts and Applications</td>
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**Senior**

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<td>Nutrition Teaching and Counseling Techniques</td>
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<td>FSHN 496B</td>
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<td>FSHN 496C</td>
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<td>FSHN 496D</td>
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FSHN 496E Group Study in Dietetics and Nutrition: Food Safety
FSHN 496F Group Study in Dietetics and Nutrition: Service Marketing
FSHN 496G Group Study in Dietetics and Nutrition: Food and Consumer Issues
FSHN 496H Group Study in Dietetics and Nutrition: Public Health and Policy
FSHN 496I Group Study in Dietetics and Nutrition: Special Topics
STAT 201 or 204 General Statistics
Statistics for Business Students

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1 Select one course each from the list in category 3D and 3E and two courses from category 3B of the All-University Core Curriculum (AUCC).

## Major Completion Map

### Freshman

#### Semester 1

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Select one group from the following:

**Group A:**
- BZ 110 Principles of Animal Biology (GT-SC2)
- BZ 111 Animal Biology Laboratory (GT-SC1)

**Group B:**
- LIFE 102 Attributes of Living Systems (GT-SC1)
- CHEM 111 General Chemistry I (GT-SC2)
- CHEM 112 General Chemistry Lab I (GT-SC1)
- MATH 117 College Algebra in Context I (GT-MA1)
- MATH 118 College Algebra in Context II (GT-MA1)
- MATH 124 Logarithmic and Exponential Functions (GT-MA1)
- PSY 100 General Psychology (GT-SS3)

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Select one course from the following:

- BZ 120 Principles of Plant Biology (GT-SC1)
- LIFE 103 Biology of Organisms-Animals and Plants
- CO 150 College Composition (GT-CO2)
- CHEM 113 General Chemistry II
- CHEM 114 General Chemistry Lab II
- MATH 125 Numerical Trigonometry (GT-MA1)
- SOC 100 General Sociology (GT-SS3)

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#### Sophomore

#### Semester 3

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| BMS 300 Principles of Human Physiology | X | 4 |
| BMS 302 Laboratory in Principles of Physiology | X | 2 |
| CHEM 341 Modern Organic Chemistry I | X | 3 |
| FSHN 150 Survey of Human Nutrition | X | 3 |
| OT 215 Medical Terminology | | 1 |

#### Semester 4

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| CHEM 343 Modern Organic Chemistry II | X | 3 |
| CHEM 344 Modern Organic Chemistry Laboratory | X | 2 |
| MATH 155 Calculus for Biological Scientists I (GT-MA1) | X | 1B |

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<tr>
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<tr>
<td>Semester 5</td>
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<tr>
<td>BC 351 Principles of Biochemistry</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>CO 300 Writing Arguments (GT-CO3)</td>
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<tr>
<td>CO 301B Writing in the Disciplines: Sciences (GT-CO3)</td>
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<tr>
<td>CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>FSHN 350 Human Nutrition</td>
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<tr>
<td>PH 121 General Physics I (GT-SC1)</td>
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<tr>
<td>BUS 150 Business Computing Concepts and Applications</td>
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<td>CS 110 Personal Computing</td>
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<td>BZ 310 Cell Biology</td>
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<td>LIFE 210 Introductory Eukaryotic Cell Biology</td>
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<tr>
<td>PH 122 General Physics II (GT-SC1)</td>
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<td>3A</td>
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<tr>
<td>Foundations and Perspectives</td>
<td>3B, 3D, 3E</td>
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<tbody>
<tr>
<td>FSHN 450 Medical Nutrition Therapy</td>
<td>x</td>
<td>4B</td>
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<tr>
<td>FSHN 451 Community Nutrition</td>
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<td>4A</td>
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<td>FSHN 459 Nutrition in the Life Cycle</td>
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<td>Select one course from the following:</td>
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<tr>
<td>FSHN 496A Group Study in Dietetics and Nutrition: Energy, Weight Management</td>
<td>x</td>
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<tr>
<td>FSHN 496B Group Study in Dietetics and Nutrition: Sustainable Food Issues</td>
<td>x</td>
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<tr>
<td>FSHN 496C Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease</td>
<td>x</td>
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<tr>
<td>FSHN 496D Group Study in Dietetics and Nutrition: Nutrition for Athletes</td>
<td>x</td>
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<tr>
<td>FSHN 496E Group Study in Dietetics and Nutrition: Food Safety</td>
<td>x</td>
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<tr>
<td>FSHN 496F Group Study in Dietetics and Nutrition: Service Marketing</td>
<td>x</td>
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<tr>
<td>FSHN 496G Group Study in Dietetics and Nutrition: Food and Consumer Issues</td>
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<tr>
<td>FSHN 496H Group Study in Dietetics and Nutrition: Public Health and Policy</td>
<td>x</td>
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<tr>
<td>FSHN 496I Group Study in Dietetics and Nutrition: Special Topics</td>
<td>x</td>
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<td>Select one course from the following:</td>
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<tr>
<td>STAT 201 General Statistics</td>
<td>x</td>
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<tr>
<td>STAT 204 Statistics for Business Students</td>
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<tbody>
<tr>
<td>FSHN 360 Nutrition Assessment</td>
<td>x</td>
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### Master of Science in Food Science and Nutrition, Dietetics Option (online)

#### Requirements

**Effective Fall 2013**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>Required Core</strong></td>
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<tr>
<td>EDRM 600</td>
<td>Introduction to Research Methods</td>
<td>3</td>
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<tr>
<td>or FSHN 501</td>
<td>Research Methods in Dietetics</td>
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<tr>
<td><strong>Select one from the following:</strong></td>
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<tr>
<td>EDRM 606</td>
<td>Principles: Quantitative Data Analysis</td>
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<tr>
<td>Advanced Statistics ¹</td>
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<tr>
<td>FSHN 503</td>
<td>Issues in Dietetics Practice</td>
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<tr>
<td>FSHN 504</td>
<td>Micronutrients</td>
<td>3</td>
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<tr>
<td>FSHN 540</td>
<td>Nutrigenomics and Advanced Lipid Metabolism</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 696C</td>
<td>Group Study: Dietetics</td>
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<tr>
<td><strong>Selected Courses</strong></td>
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<tr>
<td>Select 15 credits from the following:</td>
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<tr>
<td>FSHN 505</td>
<td>Nutrition and Physical Activity in Aging</td>
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<tr>
<td>FSHN 506</td>
<td>Nutrition and Human Performance</td>
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<td>FSHN 507</td>
<td>Nutrition Education in the Community</td>
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<td>FSHN 508</td>
<td>International Nutrition and World Hunger</td>
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<tr>
<td>FSHN 510</td>
<td>Pediatric Clinical Nutrition</td>
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<tr>
<td>FSHN 511</td>
<td>Maternal and Child Nutrition</td>
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<tr>
<td>FSHN 512</td>
<td>Nutritional Aspects of Oncology</td>
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<td>FSHN 520</td>
<td>Advanced Medical Nutrition Therapy</td>
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<tr>
<td>FTEC 578</td>
<td>Bioactives and Probiotics for Health</td>
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</tr>
<tr>
<td>FSHN 698A</td>
<td>Research: Dietetics</td>
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<tr>
<td><strong>Total Credits</strong></td>
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</table>

A minimum of 37 credits are required to complete this program.

¹ 500-level or higher statistics course approved by advisor and graduate committee.

### Master of Science in Food Science and Nutrition, Plan A, Nutrition and Exercise Science Specialization

#### Requirements

**Effective Spring 2009**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BMS 500</td>
<td>Mammalian Physiology I</td>
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<tr>
<td>or BMS 501</td>
<td>Mammalian Physiology II</td>
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<tr>
<td>FSHN 550</td>
<td>Advanced Nutritional Science I</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 551</td>
<td>Advanced Nutritional Science II</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 630/ HES 630</td>
<td>Integrative Exercise and Nutrition:</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 692</td>
<td>Seminar</td>
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<td><strong>Select one course from the following:</strong></td>
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<tr>
<td>FSHN 650A</td>
<td>Recent Developments in Human Nutrition:</td>
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<tr>
<td>Protein, Vitamins, and Minerals</td>
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<td></td>
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<tr>
<td>FSHN 650B</td>
<td>Recent Developments in Human Nutrition:</td>
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<tr>
<td>Carbohydrates, Lipids, and Energy</td>
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</table>
Master of Science in Food Science and Nutrition, Plan B, Nutrition and Exercise Science Specialization

Requirements
Effective Spring 2009

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BMS 500</td>
<td>Mammalian Physiology I</td>
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<td>or BMS 501</td>
<td>Mammalian Physiology II</td>
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<td>FSHN 550</td>
<td>Advanced Nutritional Science I</td>
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<td>FSHN 551</td>
<td>Advanced Nutritional Science II</td>
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<tr>
<td>FSHN 630/ HES 630</td>
<td>Integrative Exercise and Nutrition Metabolism</td>
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<tr>
<td>FSHN 692</td>
<td>Seminar</td>
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<tr>
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<td>Select one course from the following:</td>
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<tr>
<td>FSHN 650A</td>
<td>Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals</td>
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<tr>
<td>FSHN 650B</td>
<td>Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy</td>
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<tr>
<td>FSHN 650C</td>
<td>Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics</td>
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<tr>
<td>HES 610</td>
<td>Exercise Bioenergetics</td>
<td>3</td>
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<tr>
<td>HES 645</td>
<td>Epidemiology of Health and Physical Activity</td>
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<td>Select one course from the following:</td>
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<tr>
<td>ERHS 542</td>
<td>Biostatistical Methods for Qualitative Data</td>
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<tr>
<td>ERHS 544/ STAT 544</td>
<td>Biostatistical Methods for Quantitative Data</td>
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<tr>
<td>STAT 511</td>
<td>Design and Data Analysis for Researchers I</td>
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<td>Food Science and Human Nutrition Electives</td>
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<tr>
<td>Health and Exercise Science regular course elective</td>
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A minimum of 40 credits are required to complete this program.

Minor in Nutrition

This minor provides an opportunity for a non-major to gain a significant orientation to a food, nutrition, and health-related field. The courses in the minor in Nutrition have a significant number of prerequisites that should be examined carefully before selecting the minor. Although open to any interested student, the Nutrition minor would be most easily taken by students majoring in a life science discipline such as biology or health and exercise science.

Requirements
Effective Fall 2004

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

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<th>Code</th>
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<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>FSHN 350</td>
<td>Human Nutrition</td>
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<tr>
<td>FSHN 360</td>
<td>Nutrition Assessment</td>
<td>2</td>
</tr>
<tr>
<td>FSHN 451</td>
<td>Community Nutrition</td>
<td>3</td>
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<td>FSHN 459</td>
<td>Nutrition in the Life Cycle</td>
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<tr>
<td>FSHN 470</td>
<td>Integrative Nutrition and Metabolism</td>
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<td></td>
<td>Total Credits</td>
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Department of Health and Exercise Science

Office in Health and Exercise Science Complex, B220 Moby
(970) 491-5081
hes.chhs.colostate.edu (http://hes.chhs.colostate.edu)

Professor Barry Braun, Department Head

Undergraduate Majors

• Major in Health and Exercise Science
Graduate

Graduate Programs in Health and Exercise Science

The department offers two graduate degrees: the Master of Science in Health and Exercise Science, and the Doctor of Philosophy in Human Bioenergetics. Students interested in a Master’s degree in Public Health with a focus in Health and Exercise Science can refer to the School of Public Health (http://publichealth.colostate.edu). Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Health and Exercise Science (http://hes.chhs.colostate.edu).

Master Programs

- Master of Science in Health and Exercise Science, Plan A
- Master of Science in Health and Exercise Science, Plan B
- Master of Science in Health and Exercise Science, Plan A, Exercise Science and Nutrition Specialization

Ph.D.

- Ph.D. in Human Bioenergetics

Courses

Health and Exercise Science (HES)

HES 100A  Beginning Physical Education: Aerobic Exercise  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100C  Beginning Physical Education: Soccer  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100D  Beginning Physical Education: Self-Defense  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100E  Beginning Physical Education: Tennis  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100F  Beginning Physical Education: Ice Skating  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100G  Beginning Physical Education: Racquetball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100H  Beginning Physical Education: Golf  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100I  Beginning Physical Education: Basketball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100J  Beginning Physical Education: Volleyball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100K  Beginning Physical Education: Swimming  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100L  Beginning Physical Education: Golf  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100M  Beginning Physical Education: Basketball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100N  Beginning Physical Education: Racquetball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100O  Beginning Physical Education: Golf  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100P  Beginning Physical Education: Ice Skating  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100Q  Beginning Physical Education: Basketball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100R  Beginning Physical Education: Volleyball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HES 102C  Physical Education Activities: Special Activities  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
HES 102D  Physical Education Activities: Advanced Swimming  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HES 102F  Physical Education Activities: Conditioning and Fitness  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HES 102G  Physical Education Activities: Athletics  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HES 120  Introduction to Health and Exercise Science  Credit: 1 (1-0-0)
Course Description: Health and Exercise Science major, career options, campus resources, tools for academic success, various health-related topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HES 145  Health and Wellness  Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HES 207  Anatomical Kinesiology  Credits: 3 (2-2-0)
Course Description: Anatomical, physiological, and mechanical fundamentals of human movement.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HES 232  Techniques of Teaching Group Exercise  Credit: 1 (0-2-0)
Course Description: Learn practical skills for the instruction of various group fitness activities. Emphasis is on physiological principles related to group fitness, as well as choreography, safety, and modifications for diverse populations and current trends.
Prerequisite: HES 207.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HES 232A  Techniques of Teaching Physical Activity: Weight Training  Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HES 240  First Aid and Emergency Care  Credits: 2 (1-2-0)
Course Description: Principles, applied techniques emphasizing emergency rescue and care. Meets requirements for Red Cross Advanced First Aid and Emergency Care Credential.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HES 303  Biomechanics and Neurophysiology  Credits: 3 (3-0-0)
Course Description: Study and elementary analysis of human motion based on anatomical, neurophysiological, and mechanical principles.
Prerequisite: HES 207.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HES 307  Biomechanical Principles of Human Movement  Credits: 4 (3-2-0)
Course Description: Study and elementary analysis of human motion based on anatomical and mechanical principles.
Prerequisite: (HES 207 or BMS 301) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HES 309  Methods of Coaching  Credits: 2 (2-0-0)
Course Description: Preparation to coach in an interscholastic athletic situation.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HES 319  Neuromuscular Aspects of Human Movement  Credits:  4 (3-2-0)
Course Description: Neuromuscular anatomy and physiology of human movement. Applied/integrated topics: aging, muscle fatiguing, training, force control, and neuromuscular disease.
Prerequisite: BMS 300 and HES 207.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 332F  Techniques of Teaching Individual Sports: Weight Training  Credit:  1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching weight training with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Corresponding laboratory or competency in area.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 332H  Techniques of Teaching Individual Sports: Aerobics  Credit:  1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching aerobics with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Corresponding laboratory or competency in area.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 340  Exercise Prescription  Credits:  3 (2-2-0)
Course Description: Theory and practice of exercise prescription for healthy individuals, cardiac patients, and other special populations according to the American College of Sports Medicine (ACSM) guidelines. Includes the practice of proper lifting and spotting techniques, manipulation of training variables, and design of safe, effective, and efficient individual workout programs.
Prerequisite: BMS 300 with a minimum grade of C and FSHN 150 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 345  Population Health and Disease Prevention  Credits:  3 (3-0-0)
Course Description: Causes of disease throughout the lifespan and interventions designed to prevent disease.
Prerequisite: HES 145.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 354  Theory of Health Behavior  Credits:  3 (3-0-0)
Course Description: Health behavior (HB) theories and their application to health promotion (HP) programs. Multi-level factors that interactively impact human HBs, theoretical foundations for these factors, and the relationship between HBs & selected health outcomes. Discuss application of HB theories, and examine HP programs that have applied these theories in different settings and high risk populations.
Prerequisite: HES 145 or PSY 100.
Registration Information: Completion of 60 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 355  Integration of Health Behaviors  Credits:  3 (3-0-0)
Course Description: Designed to guide students in applying their knowledge of health behavior change to individuals with various health challenges. Explores a variety of health topics including understanding stress and coping and managing stress, behavioral factors in chronic disease, and behavioral health.
Prerequisite: HES 340 and HES 354.
Registration Information: Completion of 60 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 379  Psychology and Sport  Credits:  3 (3-0-0)
Course Description: Psychological and social implications involved in teaching physical education and coaching athletics.
Prerequisite: PSY 100 and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and BMS 300 with a minimum grade of C.
Registration Information: Must have taken the following courses and maintained a minimum GPA of 2.500 in them: HES 145; HES 207; BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 386  Practicum—Adult Fitness  Credits:  2 (1-2-0)
Course Description: Adult fitness.
Prerequisite: HES 232 and HES 340 with a minimum grade of C.
Registration Information: Must have earned a cumulative 2.750 GPA in: BMS 300, FSHN 150, HES 145, and HES 207. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 403  Physiology of Exercise  Credits:  4 (3-2-0)
Course Description: Effects of exercise on tissues, organs, and systems of the body.
Prerequisite: (BMS 300 or BMS 360) and (LIFE 102).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 405  Exercise Testing Instrumentation  Credits:  2 (1-2-0)
Course Description: Theory and operation of devices commonly employed in quantifying factors related to exercise.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
HES 410 Bioethics: Concepts and Controversies Credits: 3 (2-0-1)
Course Description: Origins of bioethics and analysis of cases/controversies in contemporary bioethics.
Prerequisite: PHIL 205.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 420 Electrocardiography and Exercise Management Credits: 3 (2-2-0)
Course Description: Interpretation of 12-lead ECG tracings, administering exercise tests, and prescribing exercise program for healthy individuals and special populations.
Prerequisite: BMS 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 434 Physical Activity Throughout the Lifespan Credits: 3 (3-0-0)
Course Description: Impact of physical activity on biology and physiology of human development and aging processes.
Prerequisite: BMS 300.
Registration Information: Credit not allowed for both HES 434 and HES 444.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 444 Successful Aging: Role of Physical Activity Credits: 2 (2-0-0)
Course Description: Biology and physiology of healthy aging and impact of disease and physical activity on aging processes.
Prerequisite: LIFE 102 or BZ 110.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 445 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Investigation of established health promotion programs with special emphasis on design, implementation, and evaluation of programming models.
Prerequisite: HES 355 and HES 386A and HES 403.
Registration Information: Senior standing. Credit not allowed for both HES 445 and HES 456.
Terms Offered: Fall, Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

HES 476 Exercise and Chronic Disease Credits: 3 (3-0-0)
Course Description: Interaction of physical activity with pathophysiology and treatment of chronic diseases and conditions.
Prerequisite: BC 351 and FSHN 350 and HES 403.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486A Practicum: Adaptive Correctives Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486B Practicum: Wellness Program Management Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: HES 386B and BMS 300 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and FSHN 150 with a minimum grade of C.
Registration Information: 2.5 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486C Practicum: Coaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 487 Internship Credits: 15 (0-0-40)
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisite: HES 486B and BMS 300 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and FSHN 150 with a minimum grade of C.
Registration Information: 2.5 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 492 Health and Exercise Science Seminar Credits: 3 (0-0-3)
Course Description: Integration and reflection on health and exercise science disciplinary knowledge.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 495A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
HES 495B Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495C Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495E Independent Study: Honors Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496B Group Study: Athletics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496C Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496D Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 520 Advanced Exercise Testing and Prescription Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise testing and prescription in apparently healthy and diseased populations.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 530 Clinical Biomechanics Credits: 3 (3-0-0)
Course Description: Effect of external loads on internal tissues; concern for injury, injury prevention, and rehabilitation.
Prerequisite: BMS 301 and HES 307.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 531 Muscle and Joint Mechanics Credits: 3 (3-0-0)
Course Description: Integrate muscle, tendon, and location of bone attachment into a comprehensive understanding of human movement at the single- and multi-joint level.
Prerequisite: BMS 301 and HES 307.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 545 Evolutionary Basis for Health and Fitness Credits: 3 (3-0-0)
Course Description: Evolutionary basis for human health and fitness based upon dietary and exercise patterns for pre-agricultural humans.
Prerequisite: HES 403 and FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 556 Wellness and Health Promotion Concepts Credits: 3 (3-0-0)
Course Description: Discussion of theory and application of health promotion in various settings.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 600 Research Design in Health/Exercise Science Credits: 3 (3-0-0)
Course Description: The research process including design, implementation, proposal synthesis and statistical considerations applied to health and exercise science.
Prerequisite: STAT 100 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 602 Advanced Physiology of Exercise Credits: 3 (3-0-0)
Course Description: Integrative exercise physiology covering metabolism, cardiovascular physiology, pulmonary physiology, and neuromuscular physiology in humans.
Prerequisite: HES 403.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HES 603 Advanced Topics in Exercise Physiology Credits: 3 (3-0-0)
Course Description: Advanced principles of theoretical and applied exercise physiology at molecular, cellular, and systemic levels.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 610 Exercise Bioenergetics Credits: 3 (3-0-0)
Course Description: Biology of energy transfer reactions related to human locomotion and exercise performance in both healthy individuals and disease states.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: FSHN 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: FSHN 551 and HES 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 619 Advanced Neural Control of Movement Credits: 3 (3-0-0)
Course Description: Neuroanatomical, neurophysiological, and applied topics on the control of force and human movement.
Prerequisite: BMS 300 and BMS 301 and HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: FSHN 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: FSHN 551 and HES 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 645 Epidemiology of Health and Physical Activity Credits: 3 (3-0-0)
Course Description: Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.
Prerequisite: HES 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 650 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Development of skills in health promotion program design, implementation and evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 656 Comprehensive Stress Management Credits: 3 (3-0-0)
Course Description: Relationship between stress and illness emphasizing methods to impact its detrimental effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686A Practicum: Adult Fitness-Human Performance Clinical/Research Laboratory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686B Practicum: Wellness Management Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686C Practicum: Youth Fitness and Skill Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686D Practicum: Health and Exercise Science Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686E Practicum: Applied Health and Exercise Science Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option, Traditional.
Special Course Fee: No.
HES 687 Internship Credits: Var[3-9] (0-0-0)
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisite: HES 686A to 686E - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 692 Seminar Credit: 1 (0-0-1)
Course Description: Consideration of graduate education in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 693 Seminar Credit: 1 (0-0-1)
Course Description: Current topics and issues in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 695A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Undergraduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695B Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695C Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Undergraduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional, Undergraduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695E Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696B Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696C Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696D Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Non-thesis research in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
HES 700  Professional Skills in Bioenergetics  Credits: 3 (2-0-1)
Course Description: Grant writing, authorship, peer review process, responsible conduct of science, research ethics, professional conduct, career opportunities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to doctoral program, or admission to M.S. program and written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 704A  Advanced Topics in Bioenergetics: Movement  Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: .
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 704B  Advanced Topics in Bioenergetics: Physiology  Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: .
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 710  Exercise in Disease Prevention  Credits: 3 (3-0-0)
Course Description: Role of exercise/physical activity in the prevention, pathophysiology and treatment of chronic diseases.
Prerequisite: HES 403 and HES 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 730  Cardiovascular Pathophysiology  Credits: 3 (3-0-0)
Course Description: Cardiovascular physiology with emphasis on the development, progression, and treatment of diseases of the cardiovascular system.
Prerequisite: HES 403 and HES 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 735  Human Cardiovascular Control  Credits: 3 (2-0-1)
Course Description: Dynamics of cardiovascular control in human health and disease.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 784  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 789  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 793  Bioenergetics Seminar  Credit: 1 (0-0-1)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 795  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Health and Exercise Science

Students may choose from two concentrations offered in the Health and Exercise Science major—Health Promotion or Sports Medicine.

Learning Outcomes

Students will demonstrate:
Potential Occupations

The United States and other developed countries are struggling with an aging and increasingly unhealthy population. Understanding the role of physical activity in preventing and treating disease and maintaining optimal health at any age is critical. Graduates trained in the foundations of human movement such as physiology, anatomy, biomechanics and neurophysiology, AND the ability to apply this knowledge to enhance the health, well-being and functional performance of the public, will be in high demand.

We take pride in training students in Health and Exercise Science to be strong critical thinkers who can express themselves clearly in written and oral form, view the world from multiple perspectives and are models of professional behavior and citizenship: qualities that will serve them well in any career they choose to pursue. Graduates that follow the Health Promotion track also acquire theoretical and hands-on training that makes them competitive for career opportunities in a wide variety of areas including, but not limited to: corporate fitness/wellness, community health/wellness, public health, health behavior change, exercise technicians, cardiac rehabilitation, personal trainers, group exercise/fitness instructors, fitness/medical equipment sales, and recreation directors. In the Sports Medicine track, graduates acquire more grounding in foundations of human movement. This training provides excellent preparation for the further education required for careers as physicians, physical therapists, college professors, physician assistants, occupational therapists, molecular imaging, and respiratory therapists.

Concentrations

• Health Promotion Concentration
• Sports Medicine Concentration

Major in Health and Exercise Science, Health Promotion Concentration

A concentration in Health Promotion provides content and experience in promoting positive health behaviors, such as physical activity, weight management, stress management, smoking cessation, and ergonomics, to name a few. Students are prepared for numerous careers in a variety of allied health fields. Specifically, graduates have found employment in corporations as wellness/fitness specialists, as hospital and community health promotion directors, in insurance-based health promotion programs, medical settings, hotel wellness facilities, university health promotion centers, and in health and fitness clubs. The curriculum focuses on health promotion program development, implementation, and evaluation. Other course work includes chemistry, anatomy, physiology of exercise, marketing, advertising, accounting, and more. Students also have opportunities for practical field experiences before graduating. We are proud that the Health Promotion concentration track of the Health and Exercise Science major was ranked #1 in the country by the Association for Worksite Health Promotion.

Requirements

Effective Fall 2015

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

The minimum GPA for students in the Health Promotion concentration must be 2.750 with no grade below C in the following courses: BMS 300, FSHN 150, HES 145, and HES 207 before departmental approval will be given to register for HES 486B Practicum: Wellness Program Management and HES 487 Internship.

Freshman

Select one group from the following:

Group A:

BZ 110 Principles of Animal Biology (GT-SC2) 3A
BZ 111 Animal Biology Laboratory (GT-SC1) 3A

Group B:

LIFE 102 Attributes of Living Systems (GT-SC1) 3A
CHEM 103 Chemistry in Context (GT-SC2) 3A
CHEM 104 Chemistry in Context Laboratory (GT-SC1) 3A
CO 150 College Composition (GT-CO2) 1A

FSHN 150 Survey of Human Nutrition 3
HES 120 Introduction to Health and Exercise Science 1
HES 145 Health and Wellness 3
HES 232A Techniques of Teaching Physical Activity: Weight Training 1
HES 232B 1
MATH 117 College Algebra in Context I (GT-MA1) 1B 1
## Major in Health and Exercise Science, Health Promotion Concentration

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
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<tr>
<td>Total Credits</td>
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### Sophomore

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<tbody>
<tr>
<td>ACT 205</td>
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<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>BUS 150 or CS 110</td>
<td>Business Computing Concepts and Applications</td>
<td>3-4</td>
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<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>HES 207</td>
<td>Anatomical Kinesiology</td>
<td></td>
</tr>
<tr>
<td>HES 240</td>
<td>First Aid and Emergency Care</td>
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</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td></td>
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<tr>
<td>Select one of the following:</td>
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<td>3</td>
</tr>
<tr>
<td>STAT 201</td>
<td>General Statistics</td>
<td></td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td></td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
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<td>Total Credits</td>
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### Junior

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CO 300 or JTC 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>2</td>
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<tr>
<td>HES 340</td>
<td>Exercise Prescription</td>
<td></td>
</tr>
<tr>
<td>HES 345</td>
<td>Population Health and Disease Prevention</td>
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<tr>
<td>HES 356</td>
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<td>HES 386A</td>
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<td>HES 403</td>
<td>Physiology of Exercise</td>
<td>4B</td>
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<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
<td></td>
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<td>MKT 320</td>
<td>Integrated Marketing Communications</td>
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<td>Global and Cultural Awareness</td>
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<td>Electives</td>
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<td>4-5</td>
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### Senior

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>HES 434</td>
<td>Physical Activity Throughout the Lifespan</td>
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<tr>
<td>HES 456</td>
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<tr>
<td>HES 486B</td>
<td>Practicum: Wellness Program Management</td>
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<tr>
<td>HES 487</td>
<td>Internship</td>
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<td>Electives</td>
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<td>5-8</td>
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Program Total Credits: 120-121

### Cardiac Care Internship Requirements

Students enrolling in internships in cardiac care must take HES 420 prior to the internship. Students may use elective credits in the sophomore, junior, or senior year to do so. A minimum grade of B (3.00) is required in HES 420 prior to internship placement.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HES 420</td>
<td>Electrocardiography and Exercise Management</td>
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</tbody>
</table>
It is recommended, but not required, that students enrolling in cardiac care internships take the following courses using elective credit from the sophomore, junior, or senior years.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>BMS 420</td>
<td>Cardiopulmonary Physiology</td>
<td>3</td>
</tr>
<tr>
<td>BMS 450</td>
<td>Pharmacology</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Students with current certification in Adult, Infant, and Child CPR; General First Aid; and AED may replace this course with 2 elective credits.

2. Students selecting an internship in cardiac care must take HES 420 prior to enrolling in the internship. See requirements and recommendations for cardiac care internships above.

3. Select enough elective credits to bring the program total to a minimum of 120-121 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

The Major Completion Map for this concentration will be published in the 17-18 General Catalog. Students should consult with their Advisor or visit the Department for the current Major Completion Map requirements.

**Major in Health and Exercise Science, Sports Medicine Concentration**

The Sports Medicine concentration is a preprofessional program that offers a science-based education dealing specifically with the application of the natural sciences to the study of health and exercise science.

In the Sports Medicine track, graduates acquire more grounding in foundations of human movement. This track provides excellent preparation for the further education required for careers as physicians, physical therapists, college professors, physician assistants, occupational therapists, pharmacology, molecular imaging, and respiratory therapists.

This concentration was structured for two types of students:

1. those seeking preprofessional preparation in medical fields, physical therapy, or allied health fields and
2. students planning to pursue an advanced degree (master’s and/or Ph.D.) in exercise science or related field.

Some of the courses required for this concentration include chemistry, biology, physics, anatomy, kinesiology, biomechanical principles of human movement, exercise testing, biochemistry, organic chemistry, human nutrition, and rehabilitation exercise.

**Requirements**

**Effective Spring 2017**

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
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<td>HES 145</td>
<td>Health and Wellness</td>
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<td>MATH 118¹</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124¹</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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<td>1</td>
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<td>MATH 125¹</td>
<td>Numerical Trigonometry (GT-MA1)</td>
<td>1B</td>
<td>1</td>
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<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
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Biology - Select one group from the following:

**Group A**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
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**Group B**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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Chemistry - Select one group from the following:²

**Group A**

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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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**Group B**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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Arts and Humanities

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<tr>
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<th>Credits</th>
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<tr>
<td>3B</td>
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**Total Credits**

30
### Sophomore

<table>
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<th>Code</th>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
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<td>CHEM 113</td>
<td>General Chemistry II</td>
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<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>HES 207</td>
<td>Anatomical Kinesiology</td>
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<td>3</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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</table>

Statistics - Select one course from the following:

<table>
<thead>
<tr>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>STAT 201</td>
<td>General Statistics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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Global and Cultural Awareness

<table>
<thead>
<tr>
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<th>AUCC</th>
<th>Credits</th>
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<tr>
<td></td>
<td></td>
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Historical Perspectives

<table>
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<th>Title</th>
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<tr>
<td></td>
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Electives

<table>
<thead>
<tr>
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<th>AUCC</th>
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<tbody>
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**Total Credits**

31

### Junior

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 245³</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>4</td>
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<tr>
<td>CHEM 246³</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>FSHN 350</td>
<td>Human Nutrition</td>
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<td>HES 307</td>
<td>Biomechanical Principles of Human Movement</td>
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<td>4</td>
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<td>HES 340</td>
<td>Exercise Prescription</td>
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<td>3</td>
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<td>HES 354</td>
<td>Theory of Health Behavior</td>
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<td>HES 403</td>
<td>Physiology of Exercise</td>
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<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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**Total Credits**

30

### Senior

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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<tr>
<td>HES 319</td>
<td>Neuromuscular Aspects of Human Movement</td>
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<td>4</td>
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<td>HES 345</td>
<td>Population Health and Disease Prevention</td>
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<td>HES 492</td>
<td>Health and Exercise Science Seminar</td>
<td>4A,4C</td>
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Sports Medicine Guided Electives - Select 10 credits from the list below:

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Electives⁴

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</table>

**Total Credits**

29

**Program Total Credits:**

120

### Sports Medicine Guided Electives List:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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</table>

BMS *** Upper-Division course not required elsewhere

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 310</td>
<td>Cell Biology</td>
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<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<tr>
<td>FSHN 470</td>
<td>Integrative Nutrition and Metabolism</td>
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</tr>
<tr>
<td>HES 379</td>
<td>Psychology and Sport</td>
<td></td>
<td>3</td>
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<tr>
<td>HES 410</td>
<td>Bioethics: Concepts and Controversies</td>
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</table>
HES 420  Electrocardiography and Exercise Management  3
HES 434  Physical Activity Throughout the Lifespan  3
LIFE 103  Biology of Organisms-Animals and Plants  4
LIFE 201A  Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2)  3
LIFE 201B  Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)  3
LIFE 205  Microbial Biology  3
LIFE 210  Introductory Eukaryotic Cell Biology  3
MATH 155  Calculus for Biological Scientists I (GT-MA1)  4
or MATH 160  Calculus for Physical Scientists I (GT-MA1)  4
MIP 300  General Microbiology  3
MIP 315  Human and Animal Disease  3
PH 122  General Physics II (GT-SC1)  5
or PH 142  Physics for Scientists and Engineers II (GT-SC1)  5
PSY 260  Child Psychology  3
or PSY *** Upper-Division course

1 MATH 155 or MATH 160 may be substituted for MATH 118, MATH 124 and MATH 125. You may not count MATH 155 or MATH 160 for a Sports Medicine Guided Elective if you have substituted one of these courses for MATH 118, MATH 124 & MATH 125.
2 CHEM 111/CHEM 112 can be substituted for CHEM 107/CHEM 108 and should be seriously considered by students who want to go on to graduate studies. Students should select CHEM 111/CHEM 112 as it better prepares students for CHEM 113/CHEM 114.
3 CHEM 341/CHEM 343/CHEM 344 may be substituted for CHEM 245/CHEM 246 provided that all three courses are completed.
4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td></td>
<td>X</td>
<td>1A</td>
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<tr>
<td>HES 145</td>
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<td>MATH 118</td>
<td></td>
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<td>X</td>
<td>1B</td>
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<tr>
<td>MATH 124</td>
<td></td>
<td></td>
<td>X</td>
<td>1B</td>
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<tr>
<td>Biology - Select one group from the following</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Group A</td>
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<tr>
<td>LIFE 102</td>
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<td>X</td>
<td>3A</td>
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<tr>
<td>Group B</td>
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<td>BZ 110</td>
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<td>BZ 111</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
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<td>3B</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
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<tbody>
<tr>
<td>FSHN 150</td>
<td></td>
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<tr>
<td>MATH 125</td>
<td></td>
<td></td>
<td>X</td>
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<td>PSY 100</td>
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<td>Chemistry - Select one group from the following:</td>
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<td>Group A</td>
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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
<td></td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
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<td>Group B</td>
<td>CAAN 111 General Chemistry I (GT-SC2)</td>
<td>3A</td>
<td></td>
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<tr>
<td></td>
<td>CAAN 112 General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
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<td></td>
<td>Arts and Humanities</td>
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<td></td>
<td>AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2.</td>
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**Sophomore**

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<tbody>
<tr>
<td>HES 207</td>
<td>Anatomical Kinesiology</td>
<td>X</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>X</td>
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<tr>
<td>STAT 201</td>
<td>General Statistics</td>
<td>X</td>
<td></td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td></td>
<td></td>
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<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
<td>3</td>
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<tr>
<td>Historical Perspectives</td>
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<td>CHEM 107/108 or CHEM 111/112 and LIFE 102/BZ 110/BZ 111 must be completed by the end of Semester 3.</td>
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<tbody>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td>X</td>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
<td>X</td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>X</td>
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<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>HES 145, FSHN 150, HES 207 and BMS 300 must be completed by the end of Semester 4.</td>
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**Junior**

<table>
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<tr>
<th>Semester 5</th>
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<tbody>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>X</td>
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<tr>
<td>HES 340</td>
<td>Exercise Prescription</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
<td>X</td>
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<tr>
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<tr>
<th>Semester 6</th>
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<tbody>
<tr>
<td>FSHN 350</td>
<td>Human Nutrition</td>
<td>X</td>
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<tr>
<td>HES 307</td>
<td>Biomechanical Principles of Human Movement</td>
<td>X</td>
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<td>4</td>
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<tr>
<td>HES 354</td>
<td>Theory of Health Behavior</td>
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<td>3</td>
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<tr>
<td>HES 403</td>
<td>Physiology of Exercise</td>
<td>X</td>
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**Senior**

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<tr>
<th>Semester 7</th>
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<tbody>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
<td>X</td>
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<tr>
<td>HES 319</td>
<td>Neuromuscular Aspects of Human Movement</td>
<td>X</td>
<td></td>
<td>4</td>
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<tr>
<td>HES 345</td>
<td>Population Health and Disease Prevention</td>
<td>X</td>
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<td>3</td>
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<tr>
<td>Guided Elective (See List on Concentration Requirements Tab)</td>
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<td></td>
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</table>
HES 307, HES 319, HES 340, and HES 403 must be completed by the end of semester 7.

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>HES 492</td>
<td>X</td>
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<tr>
<td>Guided Elective (See List on Concentration Requirements Tab)</td>
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<td>Electives</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td>X</td>
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Total Credits 15

Program Total Credits: 120

Master of Science in Health and Exercise Science, Plan A

Requirements

Effective Fall 2014

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HES 600</td>
<td>Research Design in Health/Exercise Science</td>
<td>3</td>
</tr>
<tr>
<td>HES 602</td>
<td>Advanced Physiology of Exercise</td>
<td>3</td>
</tr>
<tr>
<td>HES 610</td>
<td>Exercise Bioenergetics</td>
<td>3</td>
</tr>
<tr>
<td>HES 693</td>
<td>Seminar</td>
<td>2</td>
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<tr>
<td>HES 698</td>
<td>Research</td>
<td>3</td>
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<tr>
<td>HES 793</td>
<td>Bioenergetics Seminar</td>
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<tr>
<td>Statistics 1</td>
<td></td>
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<td>Electives 2</td>
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<td>Thesis</td>
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<tr>
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</table>

A minimum of 42 credits are required to complete this program.

1 Select three credits of statistics with approval of advisor and graduate committee.

2 Select enough 500-level or above elective credits with approval of advisor and graduate committee to bring the program total to 42 credits.

Master of Science in Health and Exercise Science, Plan A, Exercise Science and Nutrition Specialization

Requirements

Effective Spring 2009

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>FSHN 550</td>
<td>Advanced Nutritional Science I</td>
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<td>FSHN 551</td>
<td>Advanced Nutritional Science II</td>
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<tr>
<td>FSHN 630/ HES 630</td>
<td>Integrative Exercise and Nutrition Metabolism</td>
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HES 520 Advanced Exercise Testing and Prescription 3
HES 556 Wellness and Health Promotion Concepts 3
HES 600 Research Design in Health/Exercise Science 3
HES 610 Exercise Bioenergetics 3
HES 645 Epidemiology of Health and Physical Activity 3

Select one from the following: 3
- HES 686A Practicum: Adult Fitness-Human Performance Clinical/Research Laboratory
- HES 686B Practicum: Wellness Management
- HES 686C Practicum: Youth Fitness and Skill Development
- HES 686D Practicum: Health and Exercise Science Research
- HES 686E Practicum: Applied Health and Exercise Science

Thesis 6

Total Credits 38

A minimum of 38 credits are required to complete this program.

1 Nutrition regular course elective, 500-level or above (minimum 2 credits).

Master of Science in Health and Exercise Science, Plan B

Requirements

Effective Fall 2014

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HES 420</td>
<td>Electrocardiography and Exercise Management</td>
<td>3</td>
</tr>
<tr>
<td>HES 520</td>
<td>Advanced Exercise Testing and Prescription</td>
<td>3</td>
</tr>
<tr>
<td>HES 556</td>
<td>Wellness and Health Promotion Concepts</td>
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</table>
Ph.D. in Human Bioenergetics

Effective Fall 2014

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>HES 600</td>
<td>Research Design in Health/Exercise Science</td>
<td>3</td>
</tr>
<tr>
<td>HES 602</td>
<td>Advanced Physiology of Exercise</td>
<td>3</td>
</tr>
<tr>
<td>HES 645</td>
<td>Epidemiology of Health and Physical Activity</td>
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<td>Select one from the following:</td>
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<tr>
<td>HES 686A</td>
<td>Practicum: Adult Fitness-Human Performance Clinical/Research Laboratory</td>
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<tr>
<td>HES 696B</td>
<td>Group Study: Exercise and Nutrition</td>
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<td>HES 696C</td>
<td>Group Study: Exercise Science</td>
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<tr>
<td>HES 696D</td>
<td>Group Study: Biomechanics</td>
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<tr>
<td>HES 696E</td>
<td>Group Study: Neuromuscular Physiology</td>
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<tr>
<td>HES 693</td>
<td>Seminar</td>
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<td>Research</td>
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<td>Select one from the following:</td>
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<td>HES 695A</td>
<td>Independent Study: Health</td>
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<tr>
<td>HES 695B</td>
<td>Independent Study: Exercise Science</td>
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<tr>
<td>HES 695C</td>
<td>Independent Study: Biomechanics</td>
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<tr>
<td>HES 695D</td>
<td>Independent Study: Neuromuscular Physiology</td>
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<tr>
<td>Total Credits</td>
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A minimum of 44 credits are required to complete this program.

1. Select enough 500-level or above elective credits with approval of advisor and graduate committee to bring the program total to 44 credits.

2. Select six credits of statistics with approval of advisor and graduate committee.

3. Select additional dissertation credits and/or 500-level and above elective credits with approval of advisor and graduate committee to bring the program total to a minimum of 72 credits.

4. A maximum of 30 credits may be accepted from a master’s degree.

Department of Human Development and Family Studies

Office in Behavioral Sciences Building, Room 303
(970) 491-5558
hdfs.chhs.colostate.edu (http://hdfs.chhs.colostate.edu)
Professor Lise Youngblade, Department Head
Professor Deborah Fidler, Assistant Department Head

Undergraduate Majors

• Major in Early Childhood Education
• Major in Human Development and Family Studies
  • Early Childhood Professions Concentration
  • Human Development and Family Studies Concentration
  • Leadership and Entrepreneurial Professions Concentration
  • Pre-Health Professions Concentration
  • Prevention and Intervention Sciences Concentration

Online Degree Programs

The major in Human Development and Family Studies (HDFS) is offered in two formats, both leading to a Bachelor of Science degree. We offer on-campus classes to local degree-seeking students, and we offer distance students the HDFS degree through the Division of Continuing Education and CSU Online. The Online Bachelor of Science Degree in HDFS (http://www.online.colostate.edu/degrees/hdfs) provides a high quality university education that is flexible, convenient, and accessible for working and distance students. The courses in the online program are the same as the on-campus courses. The five concentrations are available online with only some limitations, as not all CSU courses are available online. The online Bachelor of Science degree in HDFS carries the full accreditation of CSU and is indistinguishable on student transcripts from the on-campus version of the degree. The Gerontology Interdisciplinary Minor and courses required to pursue a variety of certifications are also available online.
Gerontontology Interdisciplinary Minor
The Gerontontology Interdisciplinary Minor is a 21-23 credit program, housed in HDFS and available on-campus as well as online, that provides students with the opportunity to earn an undergraduate minor in gerontology. The Gerontology Interdisciplinary Minor helps students to develop an understanding of the aging process, including the biological, psychological and social aspects of adult development and aging. Admission is ongoing throughout the year. The full program may be found under University-Wide Instructional Programs.

Graduate
Graduate Programs in Human Development and Family Studies
The Department of Human Development and Family Studies offers two specializations leading to the Master of Science degree in Human Development and Family Studies (HDFS), and one doctoral program in Applied Developmental Science. The focus of the department is the development of the individual and the family throughout the lifespan. Our graduate programs provide students with an advanced understanding of human behavior and development, as well as with skills enabling them to contribute to scholarship and professional practice.

Master Programs
The Master of Science degree in HDFS (Plan A option only) has two specializations, one in Prevention Science and one in Marriage and Family Therapy. Curricula in both programs include core courses in individual development and family theories, issues in HDFS, and research methods, as well as a research thesis.

- Master of Science in HDFS, Prevention Science Specialization
- Master of Science in HDFS, Marriage & Family Therapy Specialization

Ph.D.
- Ph.D. in Applied Developmental Science

Courses
Human Development and Family Studies (HDFS)
HDFS 101 Individual and Family Development (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of life-span human development in the context of the family. Theory and research on the influence of family systems on individuals.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HDFS 175 Developmental Psychology Across the Life Span Credits: 3 (0-0-3)
Also Offered As: PSY 175.
Course Description: Theory and research on physical, cognitive, and psychosocial human development across the life span.
Prerequisite: None.
Registration Information: Offered as a telecourse only. Credit not allowed for both HDFS 175 and PSY 175.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 201 Perspectives in Gerontology Credits: 3 (3-0-0)
Course Description: Multidisciplinary perspectives on a variety of issues in human aging; exploration of careers in gerontology; service-learning with older adults; emphasis on applied gerontology.
Prerequisite: HDFS 101 or PSY 100 or SOC 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 217 Creative Experiences for Children Credits: 3 (3-0-0)
Course Description: Theories of play; art, music, and literature as related to child development.
Prerequisite: (HDFS 101 or PSY 100) and (HDFS 277, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 277 Professional Skills Development I Credit: 1 (1-0-0)
Course Description: Professional skills and opportunities relevant to contemporary issues with individuals, families and community.
Prerequisite: CO 150, may be taken concurrently or HONR 193, may be taken concurrently.
Registration Information: Human Development and Family Studies or Early Childhood Education majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 286 Practicum-Professional Skills Credits: 3 (1-6-0)
Course Description: Observational and applied experience with children, adolescents, adults, or families. Exploration of professional skills and opportunities.
Prerequisite: HDFS 101.
Registration Information: Must have completed 30 credits; required background check through CBI, FBI; major in Human Development and Family Studies or Early Childhood Education only. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 302 Marriage and Family Relationships Credits: 3 (3-0-0)
Course Description: Preparation for and adjustment to marital and family relationships throughout the life cycle.
Prerequisite: HDFS 101 or SOC 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 310  Infant and Child Development in Context  Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development from conception through middle childhood in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 311  Adolescent/Early Adult Development in Context  Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development of adolescents and young adults in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 312  Adult Development-Middle Age and Aging  Credits: 3 (3-0-0)
Course Description: Developmental issues and processes pertaining to middle and later adulthood. Contexts in which adult development and aging occur are emphasized.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 313  Death, Dying, and Grief  Credits: 3 (3-0-0)
Course Description: Developmental processes of death and dying related to the dying individuals and their families and for human service agencies.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 314  Families in the Legal Environment  Credits: 3 (3-0-0)
Course Description: Legal issues related to families, including adoption, marriage, divorce, parent and child rights, consumer issues, disability, and estate planning.
Prerequisite: None.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 404 Child Life Theory and Practice Credits: 2 (2-0-0)
Course Description: Theories and skills related to effective child life practice in hospitals.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 410 Socioemotional Development in Childhood Credits: 3 (3-0-0)
Course Description: Socioemotional development in children and the influence of biology and socialization within diverse family, school and cultural contexts. Evidence-based practices for helping professionals who will serve children ages 3 - 8.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Sections may be offered: Online. Credit allowed for only one of the following: HDFS 410, HDFS 351, HDFS 401.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 411 Developmental Transitions in Adolescence Credits: 3 (3-0-0)
Course Description: Examination of biological, socio-emotional, cognitive, and behavioral changes during adolescence.
Prerequisite: HDFS 311.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 412 Mental and Physical Health in Adulthood Credits: 3 (3-0-0)
Course Description: Mental and physical health of adults, contextual factors of development, and implications for prevention, intervention, and public health planning.
Prerequisite: HDFS 312.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 434 Risk and Resilience Across the Lifespan Credits: 3 (3-0-0)
Course Description: Why some individuals are at high risk for poor developmental outcomes, and why certain individuals fare well despite such risks or adversities. Strong developmental emphasis because resilience is viewed as a process, the results of which may not be manifest for years. There is an ecological emphasis because protective and vulnerability factors often reside in families, schools, neighborhoods.
Prerequisite: HDFS 310, may be taken concurrently and HDFS 311, may be taken concurrently.
Registration Information: Completion of 75 credit minimum. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 439 Administration of Early Childhood Programs Credits: 3 (3-0-0)
Course Description: Center administration related to program development and operations, budgeting, state regulations and licensing, and personnel issues.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 445 Early Childhood Health, Safety, and Nutrition Credits: 3 (0-0-3)
Also Offered As: FSHN 445.
Course Description: Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Credit not allowed for both HDFS 445 and FSHN 445. Offered online only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 470 Campus Connections—Mentoring At-Risk Youth Credits: 3 (0-4-2)
Course Description: Service-learning course engaging students as mentors with local at-risk youth.
Prerequisite: None.
Registration Information: Written consent of instructor. Completion of AUCC 3C Social and Behavioral Sciences. Required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 475 Entrepreneurs and Leaders in Human Services Credits: 3 (3-0-0)
Course Description: Skills and knowledge about leadership and entrepreneurship in areas pertinent to human development and family studies, as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 477 Professional Skills Development II Credit: 1 (1-0-0)
Course Description: Applications and integration of human development and family background within professional settings.
Prerequisite: HDFS 277.
Registration Information: Completion of 90 credits. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
HDFS 488A  Field Placement: Human Development and Family Studies  Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488B  Field Placement: Early Childhood  Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488C  Field Placement: Pre-Health  Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488D  Field Placement: Prevention/Intervention Science  Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488E  Field Placement: Leadership/Entrepreneurship  Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 492  Seminar-Program Proposal Development  Credits: 3 (0-0-3)
Course Description: Research, development, and oral presentations of program proposals from a family systems and development perspective.
Prerequisite: (HDFS 350) and (HDFS 477, may be taken concurrently or EDUC 400).
Registration Information: Major in Human Development and Family Studies or Early Childhood Education; completion of 90 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 493  Specialized Seminar  Credits: 3 (0-0-3)
Course Description: Advanced study of theory, research, and application in a specialized area.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495A  Independent Study: Human Development  Credits: Var[1-18] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495B  Independent Study: Family Studies  Credits: Var[1-18] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495C  Independent Study: Early Childhood Education  Credits: Var[1-18] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497A  Group Study: Peer Advising  Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
HDFS 497B Group Study: Undergraduate Outreach and Leadership Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497C Group Study: Student Respect/Wellness Education Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497D Group Study: Asian/Pacific American Cultural Center Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497E Group Study: Black/African American Cultural Center Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497F Group Study: Honors Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497G Group Study: Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student's concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 498A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 498B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 498B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 499 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Independent research project presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 500 Issues in Human Development and Family Studies Credits: 3 (2-3-0)
Course Description: A selected, broad issue in human development and family studies emphasizing principles of research.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 501 Readings in the Discipline Credit: 1 (1-0-0)
Course Description: Research in human development and family studies content areas; skills in writing an extended literature review.
Prerequisite: None.
Registration Information: Admission to HDFS master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 505 Human Development for Helping Professionals Credits: 3 (3-0-0)
Course Description: An advanced overview of lifespan development, focusing on wellness promotion and developmental influences on case conceptualization and treatment.
Prerequisite: None.
Registration Information: Graduate standing or written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 520  Family Therapy Practice: Treatment Planning  Credits: 3 (1-2-1)
Course Description: Integration of family/couple therapy theories and practice related to treatment planning and internal family systems therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 521  Family Therapy Practice: Common Factors  Credits: 3 (1-2-1)
Course Description: Application of common factors - e.g., therapeutic alliance - in family and couple therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program. Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 524  Family Theory  Credits: 3 (3-0-0)
Course Description: Major theories and conceptual frameworks for family analysis.
Prerequisite: HDFS 100 to 481 - at least 1 course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 534  Marriage and Family Therapy  Credits: 3 (3-0-0)
Course Description: Theories and techniques.
Prerequisite: HDFS 524.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 549  Research Methods I  Credits: 3 (3-0-0)
Course Description: Introduction to empirical research, data analysis, and interpretation in Human Development and Family Sciences.
Prerequisite: None.
Registration Information: Required: 3 credits of STAT; 3 credits of upper division behavioral sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 550  Research Methods II  Credits: 3 (3-0-0)
Course Description: Research strategies and ethical considerations.
Prerequisite: HDFS 549.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 590B  Workshop: Human Development  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 590B  Workshop: Family Studies  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 592  Grant Writing-Human Services and Research  Credits: 3 (1-0-2)
Course Description: Writing grant proposals that support client services or for research.
Prerequisite: STAT 201.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 593  Seminar–Human Services Leadership  Credit: 1 (0-0-1)
Course Description: Investigates issues relevant to human development and family studies, such as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: None.
Registration Information: Junior standing. Admission in a graduate program at Colorado State University or consent of instructor. Must have concurrent registration in HDFS 475. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 607  Prevention Science Across the Lifespan  Credits: 3 (2-0-1)
Course Description: Theory, methods, interventions, and standards of evidence in preventing mental, emotional, and behavioral disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper-division behavioral sciences.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 608  Program Planning and Implementation  Credits: 3 (2-2-0)
Course Description: Design or adapt research-based prevention programs from a family-centered, developmentally appropriate perspective.
Prerequisite: HDFS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 609  Prevention Program Evaluation  Credits: 3 (3-0-0)
Course Description: Concepts and practices of program evaluation in prevention science.
Prerequisite: HDFS 549, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Restriction</th>
<th>Registration Information</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Admission to Program</th>
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<tbody>
<tr>
<td>HDFS 610</td>
<td>Risk and Resilience</td>
<td>3</td>
<td>Risk and resilience processes in human development.</td>
<td>None</td>
<td>-</td>
<td>Completion of 6 credits in behavioral science courses.</td>
<td>Fall (odd years)</td>
<td>Traditional</td>
<td>No</td>
<td>Graduate, Professional</td>
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<td>HDFS 611</td>
<td>Early Child Development</td>
<td>3</td>
<td>Advanced study of developmental changes from conception through age ten;</td>
<td>None</td>
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<td>Spring (odd years)</td>
<td>Traditional</td>
<td>No</td>
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<td>HDFS 612</td>
<td>Adolescent Development</td>
<td>3</td>
<td>Classical and contemporary theory; review of research related to major developmental processes.</td>
<td>PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.</td>
<td>Must be a: Graduate, Professional.</td>
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<td>Fall (odd years)</td>
<td>Traditional</td>
<td>No</td>
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<td>HDFS 613</td>
<td>Adult Development and Aging</td>
<td>3</td>
<td>Advanced study of developmental change and adaptation during adult years.</td>
<td>PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Sections may be offered: Online.</td>
<td>Spring (even years)</td>
<td>Traditional</td>
<td>No</td>
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<td>HDFS 620</td>
<td>Family Therapy Practice: Addictions</td>
<td>3</td>
<td>Application of marriage and family therapy theories to clinical practice with a focus on addiction and self-of-the-therapist.</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Admission to the Marriage and Family Therapy Program.</td>
<td>Fall</td>
<td>Traditional</td>
<td>Yes</td>
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<td>HDFS 621</td>
<td>Family Therapy Practice: Topics in Sexuality</td>
<td>3</td>
<td>Integration of family therapy theories and practice related to topics in sexuality, termination and referral, and one's personal theory of change.</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Admission to the Marriage and Family Therapy Program.</td>
<td>Fall</td>
<td>Traditional</td>
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<td>HDFS 624</td>
<td>Skills and Techniques in Family Therapy</td>
<td>3</td>
<td>Elaboration of techniques and therapy skills based on theory and research.</td>
<td>HDFS 534</td>
<td>Must be a: Graduate, Professional.</td>
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<td>Fall</td>
<td>Traditional</td>
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<td>HDFS 636</td>
<td>Aging and the Family</td>
<td>3</td>
<td>Theory and research relating to topics on aging during middle and late years of family life cycle.</td>
<td>HDFS 300 to 481 - at least 1 course.</td>
<td>Must be a: Graduate, Professional.</td>
<td>One course in adult development or 6 credits of upper-division behavioral science.</td>
<td>Fall (even years)</td>
<td>Traditional</td>
<td>No</td>
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<td>HDFS 644</td>
<td>Foundations in Family Therapy</td>
<td>3</td>
<td>Contemporary research and treatment strategies for parenting problems, family violence, and substance abuse.</td>
<td>HDFS 524</td>
<td>Must be a: Graduate, Professional.</td>
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<td>Fall, Summer</td>
<td>Traditional</td>
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<td>HDFS 650</td>
<td>Multivariate Research Methods I</td>
<td>3</td>
<td>Statistical concepts and analysis.</td>
<td>HDFS 550</td>
<td>Must be a: Graduate, Professional.</td>
<td>Must register for lecture and recitation.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
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<td>HDFS 676</td>
<td>Professional Skills Development</td>
<td>3</td>
<td>Fundamental skills of marriage and family therapy; clinic procedures; case assessment, planning, and management.</td>
<td>None</td>
<td>Must be a: Graduate, Professional.</td>
<td>Admission to Marriage and Family Therapy Program.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
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<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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<td>HDFS 677</td>
<td>Ethical and Legal Issues</td>
<td>3</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
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<td>Course Description</td>
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<td>Ethical and legal issues in field of human development and family studies.</td>
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<td>HDFS 684</td>
<td>Supervised College Teaching</td>
<td>Var[1-18]</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer</td>
<td>S/U Sat/Unsat Only</td>
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<td>Course Description</td>
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<td>Application of advanced human development skills in professional settings.</td>
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<tr>
<td>HDFS 686A</td>
<td>Practicum: Human Development</td>
<td>Var[1-15]</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer</td>
<td>Instructor Option</td>
<td>No</td>
<td></td>
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<tr>
<td></td>
<td>Course Description</td>
<td>0-0-0</td>
<td>Application of human development skills in a variety of professional settings.</td>
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<td></td>
<td>Prerequisite: HDFS - at least 9 credits.</td>
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<td></td>
<td>Restriction: Must be a: Graduate, Professional.</td>
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<td></td>
<td>Terms Offered: Fall, Spring, Summer.</td>
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<td></td>
<td>Grade Mode: Instructor Option.</td>
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<td></td>
<td>Special Course Fee: No.</td>
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<tr>
<td>HDFS 686B</td>
<td>Practicum: Family Studies</td>
<td>Var[1-15]</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer</td>
<td>Instructor Option</td>
<td>No</td>
<td></td>
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<tr>
<td></td>
<td>Course Description</td>
<td>0-0-0</td>
<td>Application of human development skills in a variety of professional settings.</td>
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<td></td>
<td>Prerequisite: HDFS - at least 9 credits.</td>
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<td>Restriction: Must be a: Graduate, Professional.</td>
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<td>Terms Offered: Fall, Spring, Summer.</td>
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<td>Grade Mode: Instructor Option.</td>
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<td>Special Course Fee: No.</td>
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<tr>
<td>HDFS 686C</td>
<td>Practicum: Developmental Assessment</td>
<td>Var[1-15]</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall, Spring, Summer</td>
<td>Instructor Option</td>
<td>No</td>
<td></td>
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<tr>
<td></td>
<td>Course Description</td>
<td>0-0-0</td>
<td>Application of human development skills in a variety of professional settings.</td>
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<td></td>
<td>Prerequisite: HDFS - at least 9 credits.</td>
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<td>Restriction: Must be a: Graduate, Professional.</td>
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<td>Terms Offered: Fall, Spring, Summer.</td>
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<td>Grade Mode: Instructor Option.</td>
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<td>Special Course Fee: No.</td>
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</tbody>
</table>

... Additional courses and descriptions...
HDFS 695A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description: In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description: In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 696 Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description: In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 697 Research: Human Development Credits: Var[1-6] (0-0-0)
Course Description: In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description: In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description: In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 710 Theories of Applied Developmental Science Credits: 3 (3-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 750 Multivariate Research Methods II Credits: 3 (3-0-0)
Course Description: Applications of multivariate methods to research in applied developmental science.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Early Childhood Education
(Effective Spring Semester 2015, the major in Early Childhood Education replaces the preparation for teacher licensure in Early Childhood Education, Birth through Grade 3. Contact the department for details.)

In collaboration with the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) within the School of Education (http://soe.chhs.colostate.edu) (SOE), the Department of Human Development and Family Studies (HDFS) (http://www.hdfs.chhs.colostate.edu) provides a competitive-entry Early Childhood Education Major requiring an application in the sophomore year for possible admission in the junior year. The
degree enables students to apply for Early Childhood teacher licensure and (http://www.coloradoofficeofearlychildhood.com/#director-qualifications/c15f)irector Qualifi (http://www.coloradoofficeofearlychildhood.com/#director-qualifications/c15f) in the state of Colorado, and will thus qualify students to engage in a number of early childhood professions: teaching grades P-3 in public or private schools in Colorado, teaching in Head Start or other preschool or childcare programs, establishing a business as a family child care or center child care provider, or serving as director of a childcare center. An understanding of human development and family studies provides a strong foundation for students desiring a license to teach young children between the ages of 0 and 8. Knowledge of lifespan developmental processes and family systems prepares future teachers to work in partnership with parents and grandparents in educating children. Students aspiring to work with children between the ages of 0 and 8 can apply during their sophomore year to the major in Early Childhood Education. If accepted, students take courses in HDFS and SOE as a part of their degree requirements.

Students are encouraged to check the program of study as a small number of prerequisites are required prior to entry in the major. The Early Childhood Education Major uses a cohort model, and admits a limited number of students, typically between 25-30, each year. The admission process takes place once a year in the spring, with the admitted candidates starting in the fall. Students in the Early Childhood Education major achieve both Early Childhood Education core learning outcomes, obtained through HDFS and SOE courses, and all learning outcomes required by the Colorado Department of Education for Early Childhood Education licensure. (http://www.cde.state.co.us/cdeprof/checklist-initialtoprofessionalteacher)

Learning Outcomes
Students will demonstrate:

- Content knowledge and understanding of theory, research, and practice relevant to optimizing the development, health, and well-being of children and families in the context of the larger social environment.
- Effective written and oral communication skills appropriate for early childhood educators interfacing with colleagues, children, and parents/guardians.
- The ability to access, critically evaluate, and apply multiple forms of information related to children and families.
- Professional and leadership skills with individuals and families, including ethical and culturally sensitive conduct.
- Knowledge and skill in teaching and assessing literacy, mathematics, social studies, science, music, art, and physical education in early childhood.

Requirements

Effective Fall 2016

Students must complete the following courses with a C or better to fulfill requirements for the major: all EDUC courses, all HDFS courses, and PSY 460.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 101</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>LIFE 102</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>CO 150</td>
<td></td>
<td>1A</td>
</tr>
<tr>
<td>HDFS 101</td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>HDFS 217</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 277</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>PSY 100</td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Total Credits</td>
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<td>31-32</td>
</tr>
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</table>

Sophomore

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>CO 300</td>
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<tr>
<td>CO 301C</td>
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<td>EDUC 275</td>
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<td>3C</td>
</tr>
<tr>
<td>HDFS 310</td>
<td></td>
<td>3</td>
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<tr>
<td>HDFS 311</td>
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<td>3</td>
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<tr>
<td>HDFS 318</td>
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<tr>
<td>HDFS 320</td>
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<td>3</td>
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</tbody>
</table>
HDFS 334  
Family and Parenthood Across the Life Cycle  
3
Select one course from the following:  
STAT 201  
General Statistics  
3
STAT 301  
Introduction to Statistical Methods  
3
Biological and Physical Sciences  
3A  
3-4
Electives  
3
Total Credits  
30-31

Junior
EDUC 331  
Educational Technology and Assessment  
2
EDUC 340  
Literacy and the Learner  
3
EDUC 400  
Diagnostic Teaching of Reading  
3
EDUC 425  
Early Childhood Education I  
4
FSHN 445/HDFS 445  
Early Childhood Health, Safety, and Nutrition  
3
Select one course from the following:  
HDFS 317  
Special Needs in Early Childhood  
3
PSY 460  
Child Exceptionality and Psychopathology  
3
HDFS 350  
Applied Research Methods  
4A  
3
HDFS 375  
Lifespan Intervention and Prevention Science  
3
HDFS 410  
Socioemotional Development in Childhood  
3
Elective  
3
Total Credits  
30

Senior
EDUC 426  
Early Childhood Education II  
4
EDUC 485C  
Student Teaching: Early Childhood  
12
EDUC 493A  
Seminar: Professional Relations  
1
HDFS 434  
Risk and Resilience Across the Lifespan  
4B  
3
HDFS 439  
Administration of Early Childhood Programs  
3
HDFS 492  
Seminar-Program Proposal Development  
4C  
3
Elective  
2
Total Credits  
28
Program Total Credits:  
120

1 BZ 101 or LIFE 102 is required for the major in the freshman year. Select the remaining credits and course(s) from the list of courses in category 3A of the AUCC.
2 Select from the list of HIST courses in category 3D of the AUCC.
3 Any course listed under category 1B is acceptable. Recommended are MATH 117, MATH 118, MATH 124; or MATH 101; or MATH 105.

Major Completion Map
Distinctive Requirements for Degree Program:
Students seeking admission to the Early Childhood Education (ECE) Major with teacher licensure must formally apply and be accepted. The admission process into the program takes place once a year in the spring with the admitted candidates starting the program the following fall. All coursework within the Center for Educator Preparation (CEP) requires a 4 semester (or 2 year) consecutive commitment to complete, therefore EDUC subject code courses must be taken in the semester indicated. Requirements for applying to the ECE major: 1) Must have a 2.75 GPA or better, 2) Suggested to have completed 60 credits (or more) by the end of the semester in which the student is applying (typically students apply their second semester sophomore year), 3) Must have 20 hours of volunteer or work service with children ages 0-8 years (experience must have been within the last 5 years), 4) Must have 3 references. All HDFS subject code courses and EDUC subject code courses must be completed with a grade of C or higher. Students will be required to pass a criminal arrest record background check prior to participating in field placement courses. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

Freshman
Semester 1
<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Critical</td>
<td>Recommended</td>
<td>AUCC</td>
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</tr>
<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 277</td>
<td>Professional Skills Development I</td>
<td></td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>MATH 101 or MATH 117/MATH 118/MATH 124</td>
<td></td>
<td></td>
<td>X</td>
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</table>

MATH 101 or MATH 117/MATH 118/MATH 124 strongly recommended to fulfill the AUCC 1B Mathematics requirement.

Total Credits 16

**Semester 2**

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td>3</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>3</td>
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<tr>
<td>HDFS 217</td>
<td>Creative Experiences for Children</td>
<td>X</td>
<td>3</td>
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</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
<td></td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<tr>
<td>HDFS 277</td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

HDFS 277 must be completed by the end of Semester 2.

Total Credits 15

**Sophomore**

**Semester 3**

<table>
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<tr>
<th>Course Code</th>
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<th>Critical</th>
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<th>Credits</th>
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</thead>
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<tr>
<td>HDFS 310</td>
<td>Infant and Child Development in Context</td>
<td>X</td>
<td>3</td>
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</tr>
<tr>
<td>HDFS 311</td>
<td>Adolescent/Early Adult Development in Context</td>
<td>X</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>HDFS 334</td>
<td>Family and Parenthood Across the Life Cycle</td>
<td>X</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 16

**Semester 4**

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>X</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>X</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDFS 318</td>
<td>Infancy and Toddlerhood</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 201</td>
<td>General Statistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>X</td>
<td></td>
<td></td>
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</tbody>
</table>

It is recommended that students apply to ECE program by the end Semester 4.

Total Credits 15

**Junior**

**Semester 5**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td>X</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td></td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HDFS 375</td>
<td>Lifespan Intervention and Prevention Science</td>
<td></td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HDFS 410</td>
<td>Socioemotional Development in Childhood</td>
<td></td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HDFS 445/FSHN 445</td>
<td>Early Childhood Health, Safety, and Nutrition</td>
<td></td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PSY 100, STAT 201 OR STAT 301</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PSY 100, STAT 201 OR STAT 301 must be completed by the end of Semester 5.

Student must be admitted to Teacher Licensure Program by the end of Semester 5.

Total Credits 14
Major in Human Development and Family Studies

Human Development and Family Studies (HDFS) is an interdisciplinary major focusing on the development of individuals across the lifespan, within the context of family and culture. Students complete foundational coursework in human development (i.e., infancy and childhood, adolescence, emerging and young adulthood, middle and later adulthood/aging) and in the area of family studies. Students become familiar with theory and innovative research in the field and learn to identify diverse factors influencing cognitive, emotional, social, and physical development across the lifespan. Students participate in an internship in order to apply knowledge and skills acquired in foundational course work. The HDFS major offers five concentrations that enable students to specialize within their degree and prepare for a variety of career paths. In addition to selecting one of five concentrations, students also have the opportunity to work toward the Gerontology Interdisciplinary Minor or director qualifications in early childhood settings, or apply to the Early Childhood Education Major.

Learning Outcomes

Students will demonstrate:

• Content knowledge and understanding of theory, research, and practice relevant to optimizing the development, health, and well-being of individuals and families across the lifespan in the context of the larger social environment.

• Effective written and oral communication skills appropriate to the field of human development and family studies.

• The ability to access, critically evaluate, and apply multiple forms of information related to individuals and families.

• Professional and leadership skills with individuals and families, including ethical and culturally sensitive conduct.

Potential Occupations

Graduates with a major in HDFS are prepared to work in a range of human service settings including youth services organizations; early childhood, elementary, adolescent, and parent education programs; health care organizations; juvenile and adult corrections; family and community services; and programs serving older adults, including long-term care facilities. Students interested in teaching human development and family studies content at the secondary level should explore the interdepartmental major in Family and Consumer Sciences, Education Concentration. HDFS graduates are also well prepared to pursue graduate degrees in mental health, behavioral and social sciences, education, health and medicine, or other professional programs.

Some examples of career opportunities with a bachelor’s degree in HDFS include, but are not limited to: early childhood teacher, early childhood administrator, adult recreation programmer, career development specialist, family services specialist, human development specialist, adult education teacher, human resources coordinator, youth agency administrator, community outreach worker, women’s program administrator, youth intervention and prevention program administrator, youth employment, training, and development specialist, parent educator, children-family educator, child protection worker, family assistance worker, program administrator, public relations specialist, youth services worker, case manager, nonprofit agency administrator, and residential center manager.
To help guide students in their career planning, there are five concentrations within the Human Development and Family Studies major. The HDFS Major Program of Study consists of the HDFS foundational courses, which are required for all students regardless of concentration, 15 credits selected from the list of courses within students’ chosen concentration, and additional electives to reach 120 credits as required for graduation. Students must declare a minimum of one concentration and may not declare more than two concentrations in the HDFS major. The declared concentration(s) are listed on the students’ transcripts and thus indicate specialized training within the HDFS degree program.

Human Development and Family Studies Concentration

The Human Development and Family Studies Concentration is a general concentration that is available to HDFS majors who do not choose one of the more specific concentrations. This general concentration is an excellent choice for students who are interested in a lifespan or more general focus in HDFS and are not seeking the specialized training offered in the other four concentrations. Students choosing this concentration will be preparing to enter a variety of different careers or graduate programs, as outlined above. The curriculum includes primarily HDFS, psychology, and social work courses as well as selected courses from other disciplines for a well-rounded and robust education in human development and family studies. By selecting this concentration, students have an opportunity to participate in a variety of experiential learning courses and internship options as they explore and prepare for their career path and additional credentialing options. Please note that the HDFS general concentration does not appear on students' transcripts.

Early Childhood Professions Concentration

The courses in the Early Childhood Professions Concentration prepare students for careers in early childhood education as well as professional work with children across a variety of settings, including working with children with special needs. This concentration is an ideal choice for first and second year HDFS majors who plan to apply to the competitive on-campus Early Childhood Education Major during their sophomore year. Additionally, this concentration is the preferred choice for students interested in the early childhood education careers that do not require teacher licensure, or for students who will pursue a graduate degree and licensure in childhood education. Students interested in working with children with special needs, those seeking director qualifications in early childhood education, and those seeking other relevant credentials would also benefit from choosing this concentration. The curriculum incorporates courses from several disciplines that focus on early child development, education, diversity, and professional skills.

Pre-Health Professions Concentration

Many students pursuing an HDFS degree plan to apply to graduate or professional programs in a variety of health professions. The Pre-Health Professions Concentration prepares students for these careers and supports their goals of obtaining graduate training. Some of the careers students in this concentration pursue are: allied health practitioner, anesthesiologist assistant, child life specialist, chiropractor, dentist, medical doctor, music therapist, naturopathic or complementary medicine practitioner, nurse, occupational therapist, optometrist, pharmacist, physical therapist, physician’s assistant, podiatrist, speech and language pathologist, or veterinarian. The courses within this concentration include a focus on science and also help prepare students to work with individuals (and their families) with disabilities, mental and physical illness, or those experiencing death, dying, or grief. In addition, students in this concentration are strongly encouraged to consult with pre-professional advisors in the Center for Advising and Student Achievement for specific course (and corresponding course prerequisite) recommendations based on the credentials that they are pursuing, as the prerequisite requirements vary for graduate and professional programs.

Prevention and Intervention Sciences Concentration

The Prevention and Intervention Sciences Concentration is designed for students who are preparing for careers in the helping and human services professions such as counselors, educators, and social service providers, as well as for students seeking a research career in human development and family studies or a related field. This concentration is an excellent choice for students interested in careers requiring either a bachelor’s degree or additional credentials. Concentration coursework emphasizes evidence-based programs, and students will learn how to design and implement community-based prevention and intervention programs for youth, adults, and families. Students can either focus on a specific aspect of the lifespan or choose courses across the lifespan.

Leadership and Entrepreneurial Professions Concentration

The Leadership and Entrepreneurial Professions Concentration guides students who are preparing for entry-level or long-term leadership positions in organizations that promote the optimal development of individuals and families. Students in this concentration may intend to work in organizations as directors, managers, or owners. This concentration includes coursework in finance, management, marketing, public policy, professional communication, and leadership. This concentration is also appropriate for students preparing for careers in legal services, such as lawyers or politicians. Students in this concentration may choose to pursue additional credentials in leadership, business and entrepreneurship.

Online Degree Program

The HDFS major is offered in two formats, both leading to a Bachelor of Science degree. We offer on-campus classes to local degree-seeking students, and we also offer the HDFS degree online through CSU Online (http://www.online.colostate.edu). The Online Bachelor of Science Degree in HDFS (http://www.online.colostate.edu/degrees/hdfs) provides a world-class university education that is flexible, convenient, and accessible for working and distance students. The HDFS courses are the same in the online degree program as they are in the on-campus program, with many of the same faculty teaching both courses. The five HDFS concentrations are available online with only some limitations, as not all CSU courses are available online. The online Bachelor of Science degree in HDFS carries the full accreditation of CSU and is indistinguishable on student transcripts from the on-campus version of the degree.

Concentrations

- Early Childhood Professions Concentration
- Human Development and Family Studies Concentration
- Leadership and Entrepreneurial Professions Concentration
- Pre-Health Professions Concentration
- Prevention and Intervention Sciences Concentration
Major in Human Development and Family Studies, Early Childhood Professions Concentration

The courses in the Early Childhood Professions Concentration prepare students for careers in early childhood education as well as professional work with children across a variety of settings, including working with children with special needs. This concentration is an ideal choice for first and second year HDFS majors who plan to apply to the competitive on-campus Early Childhood Education Major during their sophomore year. This concentration is also the preferred choice for students interested in the early childhood education careers that do not require teacher licensure, or for students who will pursue a graduate degree and licensure in childhood education. Students interested in working with children with special needs, those seeking director qualifications in early childhood education, and those seeking other relevant credentials would also benefit from choosing this concentration. The curriculum incorporates courses from several disciplines that focus on early child development, education, diversity, and professional skills.

Requirements

Effective Fall 2016

A minimum grade of C is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Early Childhood Professions Concentration. Courses used as substitutions also require a minimum grade of C.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
</tr>
<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>HDFS 277</td>
<td>Professional Skills Development I</td>
<td></td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>1B</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>31-32</td>
</tr>
</tbody>
</table>

| Sophomore | | |
| Select one course from the following: | | 3 |
| CO 300 | Writing Arguments (GT-CO3) | 2 |
| CO 301C | Writing in the Disciplines: Social Sciences (GT-CO3) | 2 |
| HDFS 310 | Infant and Child Development in Context | |
| HDFS 311 | Adolescent/Early Adult Development in Context | 3 |
| HDFS 312 | Adult Development-Middle Age and Aging | 3 |
| HDFS 334 | Family and Parenthood Across the Life Cycle | 3 |
| STAT 201 or 301 | General Statistics Introduction to Statistical Methods | 3 |
| Early Childhood Professions Concentration Courses (See list below) | | 3 |
| Biological and Physical Sciences | | 3A |
| Electives | | 3-4 |
| Total Credits | | 30-31 |

| Junior | | |
| HDFS 350 | Applied Research Methods | 4A |
| HDFS 375 | Lifespan Intervention and Prevention Science | 4B |
| HDFS 402 | Couple and Family Studies | 3 |
| HDFS 434 | Risk and Resilience Across the Lifespan | 3 |
| Early Childhood Professions Concentration Courses | | 6 |
## Major in Human Development and Family Studies, Early Childhood Professions Concentration

**Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS 410</td>
<td>Socioemotional Development in Childhood</td>
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<td>3</td>
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<tr>
<td>HDFS 477</td>
<td>Professional Skills Development II</td>
<td></td>
<td>1</td>
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<tr>
<td>HDFS 488B</td>
<td>Field Placement: Early Childhood</td>
<td></td>
<td>5-8</td>
</tr>
<tr>
<td>HDFS 492</td>
<td>Seminar-Program Proposal Development</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Early Childhood Professions Concentration Course (See list below)</td>
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<td></td>
<td>3</td>
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<tr>
<td>Electives</td>
<td></td>
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<td>11-14</td>
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</tbody>
</table>

**Total Credits**: 29

**Program Total Credits**: 120

### Notes:
1. Of the 12 required credits of concentration courses, a minimum of 6 credits must be HDFS courses and a minimum of 9 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

2. Students with substantial career-relevant experience may petition to replace HDFS 488B with a three-course upper-division cognate defined with and approved by the advisor. The additional 1-4 credits required for the cognate can be double-counted as electives but not as concentration courses.

3. Select enough electives to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

4. Courses selected to fulfill All-University Core Curriculum (AUCC) requirements may not double count toward the Early Childhood Professions Concentration Course requirement.

## Early Childhood Professions Concentration Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 324</td>
<td>Teaching Creative Movement for Children</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 445/HDFS 445</td>
<td>Early Childhood Health, Safety, and Nutrition</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 217</td>
<td>Creative Experiences for Children</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 286</td>
<td>Practicum-Professional Skills</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 317</td>
<td>Special Needs in Early Childhood</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 318</td>
<td>Infancy and Toddlerhood</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 320</td>
<td>Cognitive and Language Development</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 439</td>
<td>Administration of Early Childhood Programs</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>IE 471</td>
<td>Children and Youth in Global Context</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PSY 460</td>
<td>Child Exceptionality and Psychopathology</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SOWK 371A</td>
<td>Social Work with Selected Populations: Children and Families</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Additional Notes:
1. Students with substantial career-relevant experience may petition to replace HDFS 488B with a three-course upper-division cognate defined with and approved by the advisor. The additional 1-4 credits required for the cognate can be double-counted as electives but not as concentration courses.

2. Select enough electives to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Distinctive Requirements for Degree Program:

Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Students will be required to pass a criminal arrest record background check prior to participating in the internship course their senior year. The internship comprises...
the HDFS 477 and HDFS 488B (requires a background check through CBI, FBI) courses which must be taken concurrently. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

### Freshman

#### Semester 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 101</td>
<td></td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 277</td>
<td></td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td>1B</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits:** 16

Select one course from the following:

- BZ 101  Humans and Other Animals (GT-SC2)  X  3A  3-4
- LIFE 102  Attributes of Living Systems (GT-SC1)  X  3A  3
- PSY 100  General Psychology (GT-SS3)  X  3C  3
- SOC 100  General Sociology (GT-SS3)  X  3C  3

Arts and Humanities  3B  3
Global and Cultural Awareness  3E  3

CO 150, HDFS 277, and AUCC 1B (MATH) requirement must be completed by the end of Semester 2.

**Total Credits:** 16

### Sophomore

#### Semester 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS 310  Infant and Child Development in Context</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 311  Adolescent/Early Adult Development in Context</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 312  Adult Development-Middle Age and Aging</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 334  Family and Parenthood Across the Life Cycle</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3-4</td>
</tr>
</tbody>
</table>

**Total Credits:** 16

Select one course from the following:

- CO 300  Writing Arguments (GT-CO3)  X  2  3
- CO 301C  Writing in the Disciplines: Social Sciences (GT-CO3)  X  2  3

Select one course from the following:

- STAT 201  General Statistics  X  3  3
- STAT 301  Introduction to Statistical Methods  X  3  3

Early Childhood Concentration Course (See Department List on Concentration Requirements tab)

Electives  6

**Total Credits:** 15

### Junior

#### Semester 5

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS 350  Applied Research Methods</td>
<td></td>
<td>X</td>
<td>4A</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 375  Lifespan Intervention and Prevention Science</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Early Childhood Concentration Course (See Department List on Concentration Requirements tab)

Electives  5

STAT 201 or STAT 301 must be completed by the end of Semester 5.

**Total Credits:** 14
### Major in Human Development and Family Studies, Human Development and Family Studies Concentration

The Human Development and Family Studies Concentration is a general concentration that is available to HDFS majors who do not choose one of the more specific concentrations. This general concentration is an excellent choice for students who are interested in a lifespan or more general focus in HDFS and are not seeking the specialized training offered in the other four concentrations. Students choosing this concentration will be preparing to enter a variety of different careers or graduate programs, as outlined above. The curriculum includes primarily HDFS, psychology, and social work courses as well as selected courses from other disciplines for a well-rounded and robust education in human development and family studies. By selecting this concentration, students have an opportunity to participate in a variety of experiential learning courses and internship options as they explore and prepare for their career path and additional credentialing options. Please note that the HDFS general concentration does not appear on students’ transcripts.

### Effective Fall 2016

A minimum grade of C is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Human Development and Family Studies Concentration. Courses used as substitutions also require a minimum grade of C.

#### Freshman

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 101</td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>LIFE 102</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>CO 150</td>
<td></td>
<td>1A</td>
</tr>
<tr>
<td>HDFS 101</td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>HDFS 277</td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>PSY 100</td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>D 324</td>
<td>Teaching Creative Movement for Children</td>
<td>2</td>
</tr>
<tr>
<td>ETST 405</td>
<td>Ethnicity, Class, and Gender in the U.S.</td>
<td>3</td>
</tr>
<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
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<tr>
<td>FSHN 444</td>
<td>Nutrition and Aging</td>
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<tr>
<td>HDFS 201</td>
<td>Perspectives in Gerontology</td>
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<td>HDFS 217</td>
<td>Creative Experiences for Children</td>
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<tr>
<td>HDFS 286</td>
<td>Practicum-Professional Skills</td>
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<td>HDFS 317</td>
<td>Special Needs in Early Childhood</td>
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<tr>
<td>HDFS 318</td>
<td>Infancy and Toddlerhood</td>
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</tr>
<tr>
<td>HDFS 320</td>
<td>Cognitive and Language Development</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 332</td>
<td>Death, Dying, and Grief</td>
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<td>HDFS 403</td>
<td>Families in the Legal Environment</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 404</td>
<td>Child Life Theory and Practice</td>
<td>2</td>
</tr>
</tbody>
</table>

One course from the following may count toward this concentration: | 3

---

**Sophomore**

Select one course from the following: 3

- CO 300 Writing Arguments (GT-CO3) 2
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3) 2
- HDFS 310 Infant and Child Development in Context 3
- HDFS 311 Adolescent/Early Adult Development in Context 3
- HDFS 334 Family and Parenthood Across the Life Cycle 3

Select one course from the following: 3

- STAT 201 General Statistics
- STAT 301 Introduction to Statistical Methods

**Biological and Physical Sciences** 3A 3-4

**Electives** 12

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**Junior**

- HDFS 312 Adult Development-Middle Age and Aging 3
- HDFS 350 Applied Research Methods 4A 3
- HDFS 375 Lifespan Intervention and Prevention Science 3
- HDFS 402 Couple and Family Studies 3
- HDFS 434 Risk and Resilience Across the Lifespan 4B 3

Human Development and Family Studies Concentration Courses (See list below) 1

Electives 5

---

**Senior**

- HDFS 477 Professional Skills Development II 1
- HDFS 488A Field Placement: Human Development and Family Studies 5-8
- HDFS 492 Seminar-Program Proposal Development 4C 3

Human Development and Family Studies Concentration Courses (See list below) 1

Electives 3

---

**Program Total Credits:** 120
HDFS 410  Socioemotional Development in Childhood
HDFS 411  Developmental Transitions in Adolescence
HDFS 412  Mental and Physical Health in Adulthood
HDFS 439  Administration of Early Childhood Programs
HDFS 470  Campus Connections–Mentoring At-Risk Youth
HDFS 497A  Group Study: Peer Advising ¹
HDFS 497B  Group Study: Undergraduate Outreach and Leadership ²
HES 444  Successful Aging: Role of Physical Activity
HONR 499  Senior Honors Thesis
IE 471  Children and Youth in Global Context
OT 355  The Disability Experience in Society
PHIL 205  Introduction to Ethics
PHIL 327  Philosophy of Behavioral Sciences
POLS 460  Public Policy Process
PSY 228  Psychology of Human Sexuality
PSY 252  Mind, Brain, and Behavior
PSY 310  Basic Counseling Skills
PSY 320  Abnormal Psychology
PSY 454  Biological Psychology
PSY 460  Child Exceptionality and Psychopathology
PSY 492A  Seminar: Applied Social Psychology ¹⁻³
PSY 492B  Seminar: Cognitive Psychology ¹⁻³
PSY 492C  Seminar: Counseling/Clinical Psychology ¹⁻³
PSY 492D  Seminar: Industrial/Organizational Psychology ¹⁻³
PSY 492E  Seminar: Perceptual and Brain Sciences ¹⁻³
PSY 492F  Seminar: Special Topics in Psychology ¹⁻³
SOWK 371A  Social Work with Selected Populations: Children and Families
SOWK 371B  Social Work with Selected Populations: Juvenile Offenders
SOWK 371C  Social Work with Selected Populations: Adult Offenders
SOWK 371D  Social Work with Selected Populations: Substance Abusers
SOWK 371E  Social Work with Selected Populations: Social Gerontology
SPCM 334  Co-Cultural Communication

1. Of the required total of 15 credits, a minimum of 9 credits must be HDFS courses. A minimum of 12 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.
2. Students with substantial career-relevant experience may petition to replace HDFS 488A with a three-course upper-division (300- to 400-level) cognate defined with and approved by the advisor. The additional 1-4 credits required for the cognate can be double-counted as electives but not as concentration courses.
3. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
4. Students may take a maximum of 3 credits of HDFS 497A and HDFS 497B to fulfill the Human Development and Family Studies Concentration Course requirement.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Students will be required to pass a criminal arrest record background check prior to participating in the internship course their senior year. The internship comprises the HDFS 477 and HDFS 488A courses which must be taken concurrently. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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College Composition (GT-CO2)
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<th>Credits</th>
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<td>Arts and Humanities</td>
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<td>3B</td>
<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td></td>
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<tr>
<td>Mathematics</td>
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**Semester 2**

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<tbody>
<tr>
<td>BZ 101 Humans and Other Animals (GT-SC2)</td>
<td>X</td>
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<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
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<td>PSY 100 General Psychology (GT-SS3)</td>
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<td>3</td>
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<tr>
<td>SOC 100 General Sociology (GT-SS3)</td>
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<td>3C</td>
<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
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<td>3B</td>
<td></td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td></td>
<td>3E</td>
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<tr>
<td>CO 150, HDFS 277 and the AUCC 1B (MATH) requirement must be completed by the end of Semester 2.</td>
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**Sophomore**

**Semester 3**

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<tr>
<td>HDFS 310 Infant and Child Development in Context</td>
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<td>HDFS 334 Family and Parenthood Across the Life Cycle</td>
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<td>3</td>
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<td>Biological and Physical Sciences</td>
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<td>Electives</td>
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**Semester 4**

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<th>Credits</th>
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<td>CO 300 Writing Arguments (GT-CO3)</td>
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<tr>
<td>CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>HDFS 311 Adolescent/Early Adult Development in Context</td>
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<td>3</td>
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<td>Select one course from the following:</td>
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<td>STAT 201 General Statistics</td>
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<td>STAT 301 Introduction to Statistical Methods</td>
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**Junior**

**Semester 5**

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<th>Credits</th>
</tr>
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<td>HDFS 312 Adult Development-Middle Age and Aging</td>
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<tr>
<td>HDFS 350 Applied Research Methods</td>
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<td>4A</td>
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<td>HDFS 375 Lifespan Intervention and Prevention Science</td>
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<td>Human Development and Family Studies Concentration Course (See Department List on Concentration Requirements tab)</td>
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<td>Elective</td>
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<td>STAT 201 or STAT 301 must be completed by the end of Semester 5.</td>
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**Semester 6**

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<td>HDFS 402 Couple and Family Studies</td>
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<tr>
<td>HDFS 434 Risk and Resilience Across the Lifespan</td>
<td>X</td>
<td></td>
<td>4B</td>
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<td>Human Development and Family Studies Concentration Courses (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>Elective</td>
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### Major in Human Development and Family Studies, Leadership and Entrepreneurial Professions Concentration

The Leadership and Entrepreneurial Professions Concentration guides students who are preparing for entry-level or long-term leadership positions in organizations that promote the optimal development of individuals and families. Students in this concentration may intend to work in organizations as directors, managers, or owners. This concentration includes coursework in finance, management, marketing, public policy, professional communication, and leadership. This concentration is also appropriate for students preparing for careers in legal services, such as lawyers or politicians. Students in this concentration may choose to pursue additional credentials in leadership, business and entrepreneurship.

### Requirements

**Effective Fall 2016**

A minimum grade of C is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Leadership and Entrepreneurial Professions Concentration. Courses used as substitutions also require a minimum grade of C.

#### Freshman

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 101</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td></td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
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<tr>
<td>HDFS 277</td>
<td>Professional Skills Development I</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
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<td>SOC 100</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
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</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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<tr>
<td>Mathematics</td>
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**Total Credits: 31-32**

#### Sophomore

Select one course from the following:

<table>
<thead>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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</table>

**Total Credits: 31-32**
HDFS 310  Infant and Child Development in Context  3
HDFS 311  Adolescent/Early Adult Development in Context  3
HDFS 334  Family and Parenthood Across the Life Cycle  3

Select one course from the following:  3
  STAT 201  General Statistics  
  STAT 301  Introduction to Statistical Methods

Biological and Physical Sciences  3A  3-4
Electives  12  

Total Credits  30-31

Junior

HDFS 312  Adult Development-Middle Age and Aging  3
HDFS 350  Applied Research Methods  4A  3
HDFS 375  Lifespan Intervention and Prevention Science  3
HDFS 402  Couple and Family Studies  3
HDFS 434  Risk and Resilience Across the Lifespan  4B  3
Leadership and Entrepreneurial Professions Concentration Courses (See list below):  9
Electives  5  

Total Credits  29

Senior

HDFS 475  Entrepreneurs and Leaders in Human Services  3
HDFS 477  Professional Skills Development II  1
HDFS 488E  Field Placement: Leadership/Entrepreneurship  5-8
HDFS 492  Seminar-Program Proposal Development  4C  3
Leadership and Entrepreneurial Professions Concentration Course (See list below):  3
Electives  3  11-14

Total Credits  29

Program Total Credits:  120

Leadership and Entrepreneurial Professions Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
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<tr>
<td>ACT 205</td>
<td>Fundamentals of Accounting</td>
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<tr>
<td>BUS 205</td>
<td>Legal and Ethical Issues in Business</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<td>ECON 211</td>
<td>Gender in the Economy (GT-SS1)</td>
<td>3E</td>
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<tr>
<td>ETST 404</td>
<td>Race Formation in the United States</td>
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<tr>
<td>ETST 405</td>
<td>Ethnicity, Class, and Gender in the U.S.</td>
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<td>FACS 320</td>
<td>Finance-Personal and Family</td>
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<tr>
<td>FIN 305</td>
<td>Fundamentals of Finance</td>
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<td>HDFS 201</td>
<td>Perspectives in Gerontology</td>
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<tr>
<td>HDFS 403</td>
<td>Families in the Legal Environment</td>
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One course from the following may count toward this concentration:  3

HDFS 410  Socioemotional Development in Childhood
HDFS 411  Developmental Transitions in Adolescence
<table>
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<tr>
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<td>HDFS 412</td>
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<td>HDFS 439</td>
<td>Administration of Early Childhood Programs</td>
<td>3</td>
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<td>HDFS 470</td>
<td>Campus Connections—Mentoring At-Risk Youth</td>
<td>3</td>
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<td>HDFS 497A</td>
<td>Group Study: Peer Advising</td>
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<tr>
<td>HDFS 497B</td>
<td>Group Study: Undergraduate Outreach and Leadership</td>
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<tr>
<td>HDFS 497C</td>
<td>Group Study: Student Respect/Wellness Education</td>
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<td>HDFS 497D</td>
<td>Group Study: Asian/Pacific American Cultural Center</td>
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<tr>
<td>HDFS 497E</td>
<td>Group Study: Black/African American Cultural Center</td>
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<tr>
<td>IU 170</td>
<td>A Call to Lead I: Theories and Skills</td>
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<tr>
<td>IU 270</td>
<td>Leadership Styles I: Personal Application</td>
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<td>Effective Leadership I: Success as a Leader</td>
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<td>Multiculturalism and the Media</td>
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<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<td>Fundamentals of Entrepreneurship</td>
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<td>MGT 360</td>
<td>Social and Sustainable Venturing</td>
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<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
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<td>PHIL 205</td>
<td>Introduction to Ethics</td>
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<td>POLS 460</td>
<td>Public Policy Process</td>
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<tr>
<td>SOC 332</td>
<td>Comparative Majority-Minority Relations</td>
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<td>SPCM 334</td>
<td>Co-Cultural Communication</td>
<td>3</td>
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<tr>
<td>SPCM 335</td>
<td>Gender and Communication</td>
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<tr>
<td>SPCM 436</td>
<td>Conflict Management and Communication</td>
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</table>

1. Of the 12 required credits of concentration elective courses, a minimum of 6 credits must be HDFS courses and a minimum of 9 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

2. Students with substantial career-relevant experience may petition to replace HDFS 488E with a three-course upper-division (300- to 400-level) cognate defined with and approved by the advisor. The additional 1-4 credits required for the cognate can be double-counted as electives but not as concentration courses.

3. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

4. Courses selected to fulfill All-University Core Curriculum (AUCC) requirements may not double count toward the Leadership and Entrepreneurial Professions Concentration Course requirement.

5. Students in the concentration may select a maximum of 6 credits of HDFS 497A, HDFS 497B, HDFS 497C, HDFS 497D, HDFS 497E, with a maximum of 3 credits per subtopic.

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**Major Completion Map**

**Distinctive Requirements for Degree Program:**

Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Students will be required to pass a criminal arrest record background check prior to participating in the internship course their senior year. The internship comprises
the HDFS 477 and HDFS 488E courses which must be taken concurrently. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
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<td>1A</td>
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<tr>
<td>HDFS 101</td>
<td></td>
<td>X</td>
<td>3C</td>
<td>3</td>
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<td>HDFS 277</td>
<td></td>
<td>X</td>
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<td>1</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td></td>
<td>3B</td>
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<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
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<td>3D</td>
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<tr>
<td>Mathematics</td>
<td></td>
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<td>16</td>
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</table>

Select one course from the following:
- BZ 101 Humans and Other Animals (GT-SC2)
- LIFE 102 Attributes of Living Systems (GT-SC1)
- PSY 100 General Psychology (GT-SS3)
- SOC 100 General Sociology (GT-SS3)

Arts and Humanities
- 3B
- 3D
- 3

Total Credits: 15

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
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<tbody>
<tr>
<td>HDFS 310</td>
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<tr>
<td>HDFS 334</td>
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<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3-4</td>
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<tr>
<td>Electives</td>
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Select one course from the following:
- CO 300 Writing Arguments (GT-CO3)
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)
- HDFS 311 Adolescent/Early Adult Development in Context

Select one course from the following:
- STAT 201 General Statistics
- STAT 301 Introduction to Statistical Methods

Electives
- 6

Total Credits: 15

### Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 312</td>
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<td>3</td>
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<td>HDFS 350</td>
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<td>X</td>
<td>4A</td>
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<td>HDFS 375</td>
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<tr>
<td>Leadership and Entrepreneurial Professions Concentration Course (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>Elective</td>
<td></td>
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<tr>
<td>STAT 201 or STAT 301 must be completed by the end of Semester 5.</td>
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<tr>
<td>HDFS 402</td>
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<td>X</td>
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</table>
Major in Human Development and Family Studies, Pre-Health Professions Concentration

Many students pursuing an HDFS degree plan to apply to graduate or professional programs in a variety of health professions. The Pre-Health Professions Concentration prepares students for these careers and supports their goals of obtaining graduate training. Some of the careers students in this concentration pursue are: allied health practitioner, anesthesiologist assistant, child life specialist, chiropractor, dentist, medical doctor, music therapist, naturopathic or complementary medicine practitioner, nurse, occupational therapist, optometrist, pharmacist, physical therapist, physician’s assistant, podiatrist, speech and language pathologist, or veterinarian. The courses within this concentration include a focus on science and also help prepare students to work with individuals (and their families) with disabilities, mental and physical illness, or those experiencing death, dying, or grief. In addition, students in this concentration are strongly encouraged to consult with pre-professional advisors in the Center for Advising and Student Achievement for specific course (and corresponding course prerequisite) recommendations based on the credentials that they are pursuing, as the prerequisite requirements vary for graduate and professional programs.

Requirements

Effective Fall 2016

A minimum grade of C is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Pre-Health Professions Concentration. Courses used as substitutions also require a minimum grade of C.

Freshman

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>3A 3-4</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
<td>3C 3</td>
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<tr>
<td>HDFS 277</td>
<td>Professional Skills Development I</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
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<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C 3</td>
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<td>Arts and Humanities</td>
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<td>3B 6</td>
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<tr>
<td>Mathematics</td>
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<td>1B 3</td>
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Program Total Credits: 120
Electives

Total Credits 31-32

Sophomore

Select one course from the following:

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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>HDFS 310</td>
<td>Infant and Child Development in Context</td>
<td>3</td>
<td></td>
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<tr>
<td>HDFS 334</td>
<td>Family and Parenthood Across the Life Cycle</td>
<td>3</td>
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Select one course from the following:

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</thead>
<tbody>
<tr>
<td>STAT 201</td>
<td>General Statistics</td>
<td></td>
<td>3</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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Pre-Health Professions Concentration Course (See list below)\(^1\)

<table>
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<tbody>
<tr>
<td>BMS 300</td>
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<td>BMS 301</td>
<td>Human Gross Anatomy</td>
<td>5</td>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
<td>2</td>
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<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<tr>
<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td>4</td>
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<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>3</td>
<td></td>
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<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
<td>3</td>
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<tr>
<td>FSHN 444</td>
<td>Nutrition and Aging</td>
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Total Credits 30-31

Junior

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<tr>
<td>HDFS 311</td>
<td>Adolescent/Early Adult Development in Context</td>
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<td>HDFS 312</td>
<td>Adult Development-Middle Age and Aging</td>
<td>3</td>
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<td>HDFS 350</td>
<td>Applied Research Methods</td>
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<tr>
<td>HDFS 375</td>
<td>Lifespan Intervention and Prevention Science</td>
<td>3</td>
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<tr>
<td>HDFS 402</td>
<td>Couple and Family Studies</td>
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<td>HDFS 434</td>
<td>Risk and Resilience Across the Lifespan</td>
<td>4B</td>
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Pre-Health Professions Concentration Courses (See list below)\(^1\)

<table>
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<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>BMS 300</td>
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<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
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<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
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<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
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<tr>
<td>FSHN 444</td>
<td>Nutrition and Aging</td>
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Total Credits 6

Senior

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<tr>
<td>HDFS 477</td>
<td>Professional Skills Development II</td>
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<td>HDFS 488C(^2)</td>
<td>Field Placement: Pre-Health</td>
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<td>HDFS 492</td>
<td>Seminar-Program Proposal Development</td>
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Pre-Health Professions Concentration Courses (See list below)\(^1\)

<table>
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<tr>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
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<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>3</td>
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</tr>
<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
<td>3</td>
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</tr>
<tr>
<td>FSHN 444</td>
<td>Nutrition and Aging</td>
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Total Credits 10-13

Pre-Health Professions Concentration Courses \(^1\)

Program Total Credits: 120
Major in Human Development and Family Studies, Pre-Health Professions Concentration

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<td>FSHN 445/HDFS 445</td>
<td>Early Childhood Health, Safety, and Nutrition</td>
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<tr>
<td>HDFS 201</td>
<td>Perspectives in Gerontology</td>
<td>3</td>
</tr>
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<td>HDFS 317</td>
<td>Special Needs in Early Childhood</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 320</td>
<td>Cognitive and Language Development</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 332</td>
<td>Death, Dying, and Grief</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 404</td>
<td>Child Life Theory and Practice</td>
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<tr>
<td>One course from the following may count toward this concentration:</td>
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<tr>
<td>HDFS 410</td>
<td>Socioemotional Development in Childhood</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 411</td>
<td>Developmental Transitions in Adolescence</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 412</td>
<td>Mental and Physical Health in Adulthood</td>
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</tr>
<tr>
<td>HES 444</td>
<td>Successful Aging: Role of Physical Activity</td>
<td>2</td>
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<tr>
<td>LIFE 205</td>
<td>Microbial Biology</td>
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<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
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<td>MIP 300</td>
<td>General Microbiology</td>
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<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
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<td>OT 110</td>
<td>Introduction to Occupational Therapy</td>
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<td>OT 215</td>
<td>Medical Terminology</td>
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<td>OT 355</td>
<td>The Disability Experience in Society</td>
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<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
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<td>PSY 252</td>
<td>Mind, Brain, and Behavior</td>
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<td>PSY 320</td>
<td>Abnormal Psychology</td>
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<tr>
<td>PSY 454</td>
<td>Biological Psychology</td>
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</table>

1. Of the required total of 15 credits, a minimum of 9 credits must be HDFS courses. A minimum of 12 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

2. Students with substantial career-relevant experience may petition to replace HDFS 488C with a three-course upper-division (300- to 400-level) cognate defined with and approved by the advisor. The additional 1-4 credits required for the cognate can be double-counted as electives but not as concentration courses.

3. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

4. All-University Core Curriculum (AUCC) courses may not be used to fulfill both AUCC requirements and Pre-Health Professions Concentration Course requirements.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Students will be required to pass a criminal arrest record background check prior to participating in the internship course their senior year. The internship comprises the HDFS 477 and HDFS 488C courses which must be taken concurrently. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

**Freshman**

<table>
<thead>
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<th>Semester 1</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>1A</td>
<td>3</td>
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<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
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<td>HDFS 277</td>
<td>Professional Skills Development I</td>
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<tr>
<td>Arts and Humanities</td>
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<td>Mathematics</td>
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**Total Credits** 16

### Semester 2

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</tbody>
</table>

Select one course from the following:

- BZ 101 Humans and Other Animals (GT-SC2) X 3A
- LIFE 102 Attributes of Living Systems (GT-SC1) X 3A
- PSY 100 General Psychology (GT-SS3) X 3C 3
- SOC 100 General Sociology (GT-SS3) X 3C 3

**Arts and Humanities** 3B 3

**Elective** 3

**CO 150, HDFS 277 and the AUCC 1B (MATH) requirement must be completed by the end of Semester 2.** X

**Total Credits** 15

### Sophomore

#### Semester 3

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</table>

HDFS 310 Infant and Child Development in Context X 3

HDFS 334 Family and Parenthood Across the Life Cycle X 3

**Biological and Physical Sciences** 3A 3-4

**Global and Cultural Awareness** 3E 3

**Historical Perspectives** 3D 3

**Total Credits** 16

### Semester 4

<table>
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<tbody>
<tr>
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</table>

Select one course from the following:

- CO 300 Writing Arguments (GT-CO3) X 2
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3) X 2

Select one course from the following:

- STAT 201 General Statistics X
- STAT 301 Introduction to Statistical Methods X

**Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)** 3

**Electives** 6

**Total Credits** 15

### Junior

#### Semester 5

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

HDFS 311 Adolescent/Early Adult Development in Context X 3

HDFS 312 Adult Development-Middle Age and Aging X 3

HDFS 402 Couple and Family Studies X 3

**Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)** 3

**Elective** 3

**STAT 201 or STAT 301 must be completed by the end of Semester 5.** X

**Total Credits** 15

### Semester 6

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

HDFS 350 Applied Research Methods X 4A 3

HDFS 375 Lifespan Intervention and Prevention Science X 3

HDFS 434 Risk and Resilience Across the Lifespan X 4B 3

**Pre-Health Professions Concentration Course (See Department List on Concentration Requirements tab)** 3

**Elective** 3

**Total Credits** 15
Major in Human Development and Family Studies, Prevention and Intervention Sciences Concentration

The Prevention and Intervention Sciences Concentration is designed for students who are preparing for careers in the helping and human services professions such as counselors, educators, and social service providers, as well as for students seeking a research career in human development and family studies or a related field. This concentration is an excellent choice for students interested in careers requiring either a bachelor’s degree or additional credentials. Concentration coursework emphasizes evidence-based programs, and students will learn how to design and implement community-based prevention and intervention programs for youth, adults, and families. Students can either focus on a specific aspect of the lifespan or choose courses across the lifespan.

Requirements

Effective Fall 2016

A minimum grade of C is required in all courses used to satisfy the requirements of the Major in Human Development and Family Studies, Prevention and Intervention Sciences Concentration. Courses used as substitutions also require a minimum grade of C.

Freshman

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 277</td>
<td>Professional Skills Development I</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td>1B</td>
<td>3</td>
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</table>

Total Credits 31-32

Sophomore

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>HDFS 310</td>
<td>Infant and Child Development in Context</td>
<td>3</td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
<td>Credits</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>ANTH 340</td>
<td>Medical Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 343</td>
<td>Applied Medical Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 443</td>
<td>Ethnographic Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>ETST 404</td>
<td>Race Formation in the United States</td>
<td>3</td>
</tr>
<tr>
<td>ETST 405</td>
<td>Ethnicity, Class, and Gender in the U.S.</td>
<td>3</td>
</tr>
<tr>
<td>FACS 320</td>
<td>Finance-Personal and Family</td>
<td>3</td>
</tr>
<tr>
<td>FDVS 201</td>
<td>Perspectives in Gerontology</td>
<td>3</td>
</tr>
<tr>
<td>FDVS 286</td>
<td>Practicum-Professional Skills</td>
<td>3</td>
</tr>
<tr>
<td>FDVS 332</td>
<td>Death, Dying, and Grief</td>
<td>3</td>
</tr>
<tr>
<td>FDVS 403</td>
<td>Families in the Legal Environment</td>
<td>3</td>
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</tbody>
</table>

One course from the following may count toward this concentration:

- FDVS 410 Socioemotional Development in Childhood
- FDVS 411 Developmental Transitions in Adolescence
- FDVS 412 Mental and Physical Health in Adulthood
- FDVS 470 Campus Connections--Mentoring At-Risk Youth
- FDVS 498A Research: Human Development
- FDVS 498B Research: Family Studies
- FDVS 499 Thesis
- HONR 499 Senior Honors Thesis
- IE 470 Women and Development
- IE 471 Children and Youth in Global Context
Of the 15 credits of concentration courses, a minimum of 9 credits must be HDFS courses and a minimum of 12 credits must be upper-division (300- to 400-level). Courses may not double-count for more than one HDFS concentration.

Students with substantial career-relevant experience may petition to replace HDFS 488D with a three-course upper-division cognate defined with and approved by the advisor. The additional 1-4 credits required for the cognate can be double-counted as electives but not as concentration courses.

Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Human Development and Family Studies is an open-entry major for freshmen. For sophomores and above, students must complete and/or be enrolled in HDFS 101, PSY 100 or SOC 100 in order to declare HDFS. HDFS subject code courses must be completed with a grade of C or higher. Students will be required to pass a criminal arrest record background check prior to participating in the internship course their senior year. The internship comprises the HDFS 477 and HDFS 488D courses which must be taken concurrently. Students will complete a graduation contract with an HDFS Academic Advisor during the first two weeks of the semester in which they are graduating.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td></td>
<td>X</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>HDFS 101 Individual and Family Development (GT-SS3)</td>
<td></td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 277 Professional Skills Development I</td>
<td></td>
<td>X</td>
<td></td>
<td>1</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Historical Perspectives</td>
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<td>3D</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
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<td></td>
<td>1B</td>
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<tr>
<td><strong>Total Credits</strong></td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>BZ 101 Humans and Other Animals (GT-SC2)</td>
<td></td>
<td>X</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
<td></td>
<td>X</td>
<td>3A</td>
<td></td>
</tr>
</tbody>
</table>
PSY 100  General Psychology (GT-SS3)  X  3C  3
SOC 100  General Sociology (GT-SS3)  X  3C  3
Arts and Humanities  3B  3
Global and Cultural Awareness  3E  3

CO 150, HDFS 277 and AUCC 1B (MATH) requirement must be completed by the end of Semester 2.

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS 310</td>
<td>Infant and Child Development in Context</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 334</td>
<td>Family and Parenthood Across the Life Cycle</td>
<td>X</td>
<td></td>
<td>3</td>
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</tbody>
</table>

Biological and Physical Sciences  3A  3-4

Electives  6

Total Credits  15

**Sophomore**

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
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<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>X</td>
<td>2</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>X</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>HDFS 311</td>
<td>Adolescent/Early Adult Development in Context</td>
<td>X</td>
<td></td>
<td>3</td>
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</tbody>
</table>

Select one course from the following: 3

| STAT 201  | General Statistics | X | |
| STAT 301  | Introduction to Statistical Methods | X | |

Electives  6

Total Credits  16

**Junior**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 312</td>
<td>Adult Development-Middle Age and Aging</td>
<td>X</td>
<td></td>
<td>3</td>
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<tr>
<td>HDFS 350</td>
<td>Applied Research Methods</td>
<td>X</td>
<td>4A</td>
<td>3</td>
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<tr>
<td>HDFS 375</td>
<td>Lifespan Intervention and Prevention Science</td>
<td>X</td>
<td></td>
<td>3</td>
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</tbody>
</table>

Prevention and Intervention Science Concentration Course (See Department List on Concentration Requirements tab) 3

Elective  2

STAT 201 or STAT 301 must be completed by the end of Semester 5. X

Total Credits  14

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 402</td>
<td>Couple and Family Studies</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HDFS 434</td>
<td>Risk and Resilience Across the Lifespan</td>
<td>X</td>
<td>4B</td>
<td>3</td>
</tr>
</tbody>
</table>

Prevention and Intervention Science Concentration Courses (See Department List on Concentration Requirements tab) 6

Elective  3

Total Credits  15

**Senior**

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 477</td>
<td>Professional Skills Development II</td>
<td></td>
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<tr>
<td>HDFS 488D</td>
<td>Field Placement: Prevention/Intervention Science</td>
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<td>5-8</td>
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Prevention and Intervention Science Concentration Course (See Department List on Concentration Requirements tab) 3

Electives  2-5

HDFS 350 must be completed by the end of Semester 7. X

Total Credits  14

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<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>HDFS 492</td>
<td>Seminar-Program Proposal Development</td>
<td>X</td>
<td>4C</td>
<td>3</td>
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</tbody>
</table>

HDFS 492 Seminar-Program Proposal Development 3
Prevention and Intervention Science Concentration Course (See Department List on Concentration Requirements tab) X 3
Electives X 9
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 15
Program Total Credits: 120

Master of Science in Human Development and Family Studies, Plan A, Marriage and Family Therapy Specialization

The Marriage and Family Therapy (MFT) program, which is accredited by the Commission on the Accreditation of Marriage & Family Therapy Education, provides a specific professional curriculum that prepares graduates for licensure as Marriage and Family Therapists. Courses focus on individual and family development, evidence-based clinical practices, social-justice frameworks, and research methods. MFT students also complete a thesis. Training includes practica and internships with live supervision in the CSU Center for Family and Couple Therapy as well as Campus Connections: Therapeutic Mentoring At Risk Youth and other clinical programs. MFT graduates go on to work as therapists in private practice or at for-profit and non-profit mental health agencies. Some students enter doctoral programs upon graduation, including our Applied Developmental Science doctoral program.

For more information, please visit Department of Human Development & Family Studies Marriage and Family Therapy Program (http://www.hdfs.chhs.colostate.edu/students/masters/mft.aspx).

Requirements Effective Fall 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDCO 693</td>
<td>Seminar-Guidance and Counseling ¹</td>
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<tr>
<td>HDFS 500</td>
<td>Issues in Human Development and Family Studies</td>
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<tr>
<td>HDFS 501</td>
<td>Readings in the Discipline</td>
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<tr>
<td>HDFS 520</td>
<td>Family Therapy Practice: Treatment Planning</td>
<td>3</td>
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<tr>
<td>HDFS 521</td>
<td>Family Therapy Practice: Common Factors</td>
<td>3</td>
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<tr>
<td>HDFS 524</td>
<td>Family Theory</td>
<td>3</td>
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<tr>
<td>HDFS 534</td>
<td>Marriage and Family Therapy</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 549</td>
<td>Research Methods I</td>
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<tr>
<td>HDFS 550</td>
<td>Research Methods II</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 620</td>
<td>Family Therapy Practice: Addictions</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 621</td>
<td>Family Therapy Practice: Topics in Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 624</td>
<td>Skills and Techniques in Family Therapy</td>
<td>3</td>
</tr>
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<td>HDFS 644</td>
<td>Foundations in Family Therapy</td>
<td>3</td>
</tr>
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<td>HDFS 676</td>
<td>Professional Skills Development</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 677</td>
<td>Ethical and Legal Issues</td>
<td>3</td>
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<tr>
<td>HDFS 687C</td>
<td>Internship: Marriage and Family Therapy</td>
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</table>

Select seminar when topic is Guidance and Counseling only.

A minimum of 60 credits are required to complete this program.

Master of Science in Human Development and Family Studies, Plan A, Prevention Science Specialization

Coursework in the Prevention Science specialization focuses on the processes of lifespan development and normative family functioning, as well as theories of prevention science and risk and resilience. Students gain skills such as program planning and evaluation, program administration, grant writing, research design, and technical communication. Graduates of the Prevention Science program enter careers in program evaluation, policy analysis, education, and the management of prevention and intervention programs in human services. For students who are interested in prevention-oriented research careers, this specialization articulates well with the Applied Developmental Science doctoral program.

For more information, please visit Department of Human Development & Family Studies Prevention Science Program (http://www.hdfs.chhs.colostate.edu/students/masters/ps.aspx).

Requirements Effective Fall 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 610</td>
<td>Risk and Resilience</td>
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<tr>
<td>HDFS 611</td>
<td>Early Child Development</td>
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</tr>
<tr>
<td>HDFS 612</td>
<td>Adolescent Development</td>
<td></td>
</tr>
<tr>
<td>HDFS 613</td>
<td>Adult Development and Aging</td>
<td></td>
</tr>
<tr>
<td>HDFS 792A</td>
<td>Seminar: Lifespan Socioemotional Development</td>
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<tr>
<td>HDFS 792B</td>
<td>Seminar: Lifespan Cognitive Development</td>
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<tr>
<td>HDFS 692A</td>
<td>Family Issues: Intimacy and Human Sexuality</td>
<td></td>
</tr>
<tr>
<td>HDFS 692B</td>
<td>Family Issues: Parenting</td>
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<tr>
<td>HDFS 699</td>
<td>Thesis</td>
<td>6</td>
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</tbody>
</table>

Total Credits 60

¹ Select seminar when topic is Guidance and Counseling only.
HDFS 500  Issues in Human Development and Family Studies 3
HDFS 501  Readings in the Discipline 1
HDFS 524  Family Theory 3
HDFS 549  Research Methods I 3
HDFS 550  Research Methods II 3
HDFS 592  Grant Writing-Human Services and Research 3
HDFS 607  Prevention Science Across the Lifespan 3
HDFS 608  Program Planning and Implementation 3
HDFS 609  Prevention Program Evaluation 3
HDFS 610  Risk and Resilience 3
HDFS 650  Multivariate Research Methods I 3

Selected Courses
Select at least two from the following: 6
HDFS 611  Early Child Development
HDFS 612  Adolescent Development
HDFS 613  Adult Development and Aging
HDFS 710  Theories of Applied Developmental Science

Electives 1

Thesis
HDFS 699  Thesis 6

Total Credits 43

A minimum of 43 credits are required to complete this program.
1 Select enough 500-level or above elective credits with approval of advisor and graduate committee to bring the program total to 43 credits.

Ph.D. in Applied Developmental Science

The Ph.D. program in Applied Developmental Science (ADS) emphasizes how research regarding basic processes in human development can be used to prevent problems and enhance well-being across the lifespan. Students gain knowledge in lifespan human development theory, empirical research skills to conduct high-quality basic and applied research, and the abilities to translate science into practices and programs that address a wide range of social and public health problems. Graduates from the ADS program have the basic knowledge and the applied skills to work in settings such as academia, for-profit and not-for-profit research and advocacy organizations, governmental and human services agencies, or community agencies with programs designed to enhance health and well-being of individuals, families, and communities.

Students can enter the ADS program with a completed master’s degree or with a completed bachelor’s degree. Students entering with a bachelor’s will be required to complete a master’s in Human Development and Family Studies (HDFS), with a specialization in Prevention Science or Marriage and Family Therapy.

For more information, please visit Department of Human Development & Family Studies Ph.D. in Applied Developmental Science (http://www.hdfs.chhs.colostate.edu/students/doctoral).

Requirements
Effective Fall 2015

Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 500</td>
<td>Issues in Human Development and Family Studies</td>
<td>3</td>
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<tr>
<td>HDFS 524</td>
<td>Family Theory</td>
<td>3</td>
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<tr>
<td>HDFS 610</td>
<td>Risk and Resilience</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 710</td>
<td>Theories of Applied Developmental Science</td>
<td>3</td>
</tr>
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</table>

Applied Developmental Science Elective Courses

Select a minimum of 21 credits from the following courses: 21

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 592</td>
<td>Grant Writing-Human Services and Research</td>
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<tr>
<td>HDFS 607</td>
<td>Prevention Science Across the Lifespan</td>
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<tr>
<td>HDFS 608</td>
<td>Program Planning and Implementation</td>
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<td>HDFS 609</td>
<td>Prevention Program Evaluation</td>
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<td>HDFS 611</td>
<td>Early Child Development</td>
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<tr>
<td>HDFS 612</td>
<td>Adolescent Development</td>
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<tr>
<td>HDFS 613</td>
<td>Adult Development and Aging</td>
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<tr>
<td>HDFS 692C</td>
<td>Family Issues: Family Policy and Programming</td>
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Electives 1

Research Methods/Statistics

<table>
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<tr>
<th>Code</th>
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<td>HDFS 549</td>
<td>Research Methods I</td>
<td>3</td>
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<td>HDFS 550</td>
<td>Research Methods II</td>
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<tr>
<td>HDFS 650</td>
<td>Multivariate Research Methods I</td>
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</tr>
<tr>
<td>HDFS 750</td>
<td>Multivariate Research Methods II</td>
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Methodology/Statistics Elective 3

Research/Apprenticeship/Internship

Select a minimum of 6 credits from the following courses: 6

<table>
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<td>HDFS 684</td>
<td>Supervised College Teaching</td>
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<tr>
<td>HDFS 687A</td>
<td>Internship: Human Development</td>
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<tr>
<td>HDFS 687B</td>
<td>Internship: Family Studies</td>
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<td>HDFS 687C</td>
<td>Internship: Marriage and Family Therapy</td>
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<tr>
<td>HDFS 698A</td>
<td>Research: Human Development</td>
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<tr>
<td>HDFS 698B</td>
<td>Research: Family Studies</td>
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Thesis and Dissertation

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<td>HDFS 699</td>
<td>Thesis</td>
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<tr>
<td>HDFS 799</td>
<td>Dissertation</td>
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</table>

Total Credits 79

A minimum of 79 credits are required to complete this program.
1 Select courses with approval of advisor and graduate committee.
Department of Occupational Therapy

Occupational Therapy Building, Room 200
(970) 491-6253
ot.chhs.colostate.edu (http://ot.chhs.colostate.edu)

Dr. Anita Bundy, Department Head

Known nationally and internationally for its excellence, the Department of Occupational Therapy is ranked among the top 10 programs in the nation by U.S. News and World Report. It is recognized by CSU as a Program of Research and Scholarly Excellence and it has been designated as a Program of Excellence by the state of Colorado. The department offers graduate-level education to prepare students as leaders in the field of occupational therapy.

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449; (301) 652-6611. The National Board for Certification in Occupational Therapy (NBCOT) is the credentialing agency responsible for the development and implementation of the certification process for OT practitioners.

Students interested in more information regarding prerequisite and application requirements may contact the department at (970) 491-6253 or otinfo@colostate.edu.

Graduate

Graduate Programs in Occupational Therapy

The Occupational Therapy Department offers the following degree programs:

- Master of Science in Occupational Therapy (M.S.)
- Master of Occupational Therapy (M.O.T.)
- Post-Professional Master of Science (M.S.)
- Ph.D. in Occupation and Rehabilitation Science

Students with a bachelor’s degree in a discipline outside of occupational therapy pursue the Master of Science (http://www.ot.chhs.colostate.edu/students/professional.aspx) or the Master of Occupational Therapy (http://www.ot.chhs.colostate.edu/students/professional.aspx) degree. The program focuses on preparation for a broad-based, advanced-generalist practice and provides students with the knowledge and skills necessary to support people of all ages who have special needs by addressing daily challenges related to their life roles and assisting them in maximizing their independence.

Students with a bachelor’s degree in occupational therapy pursue the Post-Professional Master of Science (http://www.ot.chhs.colostate.edu/students/post-professional.aspx) degree. Under the guidance of an advisor, students complete an individualized program of study and a thesis project that is designed to add to the profession’s understanding of human performance and participation in everyday occupations and contexts.

The interdisciplinary Doctor of Philosophy (Ph.D.) degree in Occupation and Rehabilitation Science (http://www.ot.chhs.colostate.edu/students/phd.aspx) offers graduate training in research that is dedicated to assisting people of all ages and abilities perform and participate in everyday occupations as a source of lifelong meaning, development, health, and well-being. The program was created to meet the national demand for Ph.D. trained scientists and educators in occupational therapy and related disciplines. Upon graduation, students typically pursue academic careers in research and higher education, although additional career opportunities exist in industry and government.

Please contact the Occupational Therapy Department for further details by calling (970) 491-6253 or emailing the department at otinfo@colostate.edu.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Occupational Therapy (http://ot.chhs.colostate.edu).

Master Programs

- Master of Science in Occupational Therapy, Plan A
- Master of Occupational Therapy, Plan C

Ph.D.

- Ph.D. in Occupation and Rehabilitation Science

Courses

Occupational Therapy (OT)

OT 110 Introduction to Occupational Therapy Credits: 3 (3-0-0)
Course Description: Roles and activities in occupational therapy.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 215 Medical Terminology Credit: 1 (0-0-1)
Course Description: Definition and use of medical terms.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
OT 355 The Disability Experience in Society Credits: 2 (1-0-1)  
Course Description: Description and exploration of disabling conditions; review of support systems including legal and financial implications.  
Prerequisite: PSY 100 or SOC 100.  
Registration Information: Must register for lecture and recitation.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 450 Biomechanics of Human Occupation Credits: 3 (0-2-2)  
Course Description: Exploration of performance of the activities of daily living in context as impacted by function/dysfunction of the human musculoskeletal system.  
Prerequisite: None.  
Registration Information: Minimum of 4 credits of either combined anatomy and physiology or human anatomy at the 200-level or higher. Sections may be offered: Online.  
Terms Offered: Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 590 Workshop Credits: Var[1-9] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

OT 597 Group Study Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

OT 601 Occupation and Rehabilitation Science I Credits: 3 (1-0-2)  
Course Description: Multidisciplinary perspectives on human performance and participation in everyday occupations.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to master’s degree program in occupational therapy.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 610 Professional Decision Making Credits: 3 (0-2-2)  
Course Description: Exploration of the thought processes occupational therapists use when determining how best to address clients’ needs.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to master’s degree program in occupational therapy.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 611 Reflective and Evidence-Based Practice Credits: 3 (0-0-3)  
Course Description: Development of reflective and evidence-based practice skills through integrating and synthesizing fieldwork experiences in OT practice.  
Prerequisite: OT 687A to 687Z.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 620 Research to Practice I Credits: 3 (3-0-0)  
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to individuals.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to master’s degree program in occupational therapy.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 621 Occupational Performance: Infancy-Childhood Credits: 4 (2-2-1)  
Course Description: Optimizing occupational performance and participation for infants and children within a contextual framework.  
Prerequisite: OT 687A to 687Z.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Written consent of the Occupation Therapy Department can be substituted for OT 687.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 630 Occupational Performance: Adult to Old Age I Rec Credits: 3 (0-0-3)  
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence and activities.  
Prerequisite: OT 610 and OT 620 and OT 601.  
Restriction: Must be a: Graduate.  
Registration Information: Must have concurrent registration in OT 636; must have concurrent registration in OT 660; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

OT 631 Program Assessment and Development Credits: 3 (0-0-3)  
Course Description: Assessment of program strengths and needs, followed by development of proposals to support occupational performance and participation.  
Prerequisite: OT 687A to 687Z.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Written consent of the Occupational Therapy Department can substitute for OT 687A-Z.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.
OT 636  Occupational Performance: Adult/Old Age I Lab  Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence, and activities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate.
Registration Information: Must have concurrent registration in OT 630; Must have concurrent registration in OT 660; Must have concurrent registration in OT 665; Must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 640 Research to Practice II Credits: 3 (3-0-0)
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to groups and systems.
Prerequisite: OT 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 641 Occupation and Rehabilitation Science II Credits: 3 (1-0-2)
Course Description: Explore historical evolution of topics and the link to future implications for and growth of occupation and rehabilitation science.
Prerequisite: OT 601 and OT 611 and OT 631 and OT 687 to 687*.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 656 Topics on Brain Plasticity and Performance Credits: 3 (2-0-1)
Course Description: Multidisciplinary viewpoints on brain plasticity and its relationship to performance across the lifespan.
Prerequisite: None.
Registration Information: Occupational Therapy graduate student or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 660 Occupational Performance: Adult/Old Age II Rec  Credits: 3 (0-0-3)
Course Description: Foundations of occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 610 and OT 620 and OT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 661 Occupational Performance: Adolescent-Young Adult Credits: 3 (1-2-1)
Course Description: Optimizing occupational performance and participation for youth and young adults within a contextual framework.
Prerequisite: OT 621.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 665 Adult to Old Age II Lab Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 660; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 666 Optimizing Occupation through Technology Credits: 3 (0-0-3)
Course Description: Use of technology-based resources and/or strategies (current and emerging) to meet client needs in their everyday occupations and contexts.
Prerequisite: None.
Registration Information: Admission to Occupational Therapy M.O.T., M.S., or Ph.D. program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 676 Pathokinesiological Conditions and Assessment Credits: 3 (3-0-0)
Course Description: Various musculoskeletal imbalances and injuries that present as difficulties in function and participation in everyday activity.
Prerequisite: OT 450.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686A Fieldwork I: OT Process Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to occupational therapy master’s degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.
OT 686B  Fieldwork I: Seminar  Credits: 3 (0-2-2)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of all first year OT courses; admission to occupational therapy master's degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 686C  Fieldwork I: Adult to Old Age  Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A and OT 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Concurrent registration in OT 630 and OT 660; evidence of professional liability insurance required.
Terms Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686D  Fieldwork I: Infancy to Young Adult  Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A to 687Z and (OT 621, may be taken concurrently or OT 661, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

OT 686E  Fieldwork I: Special Interest  Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 687A  Fieldwork IIA: Acute In-Patient  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687B  Fieldwork IIA: Rehab In-Patient  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687C  Fieldwork IIA: SNF/Acute LTC  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687D  Fieldwork IIA: General Rehab Out-Patient  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687E  Fieldwork IIA: Hand Therapy Hospital Out-Patient  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687F  Fieldwork IIA: Hand Therapy Private Out-Patient  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687G  Fieldwork IIA: Psych In-Patient  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
OT 687H Fieldwork IIA: Combined Practice Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687M Fieldwork II: Behavioral Health Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687N Fieldwork II: Older Adult Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688A Fieldwork IIB: Acute In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688B Fieldwork IIB: Rehab In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688C Fieldwork IIB: SNF/Acute LTC Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688D Fieldwork IIB: General Rehab Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
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<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Restriction</th>
<th>Registration Information</th>
<th>Terms Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Notes</th>
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<tr>
<td>OT 688E</td>
<td>Fieldwork IIB: Hand Therapy Hospital Out-Patient</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
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<td>OT 688F</td>
<td>Fieldwork IIB: Hand Therapy Private Out-Patient</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
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<td>OT 688G</td>
<td>Fieldwork IIB: Psych In-Patient</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
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<td>OT 688H</td>
<td>Fieldwork IIB: Combined Practice</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
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<td>OT 688I</td>
<td>Fieldwork IIB: Pediatric Hospital/Unit</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
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<td>OT 688J</td>
<td>Fieldwork IIB: Pediatric Hospital/Out-Patient</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
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<td>OT 688K</td>
<td>Fieldwork IIB: Pediatric Community</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
<td>Special Course Fee: No.</td>
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<td>OT 688L</td>
<td>Fieldwork IIB: Pediatric Out-Patient Clinic</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
<td>Special Course Fee: No.</td>
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<td>OT 688M</td>
<td>Fieldwork IIB: Behavioral Health Community</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
<td>Special Course Fee: No.</td>
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<td>OT 688N</td>
<td>Fieldwork IIB: Older Adult Community</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
<td>Special Course Fee: No.</td>
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<td>OT 688O</td>
<td>Fieldwork IIB: Older Adult Day Program</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
<td>Special Course Fee: No.</td>
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<td>OT 688P</td>
<td>Fieldwork IIB: Adult Day Program</td>
<td>Var[1-12] (0-0-0)</td>
<td>Level II fieldwork in various settings.</td>
<td>None.</td>
<td>Must be a: Graduate, Professional.</td>
<td>Successful completion of first year of OT Master’s Program courses; approval of department chair required.</td>
<td>Fall, Spring, Summer.</td>
<td>S/U Sat/Unsat Only</td>
<td>Special Course Fee: No.</td>
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</tbody>
</table>
OT 688Q  Fieldwork IIB: Home Health  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
OT 688R  Fieldwork IIB: School Early Intervention  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
OT 688S  Fieldwork IIB: School (PK-12)  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master's Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
OT 690  Workshop  Credits: Var[1-9] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 692  Seminar  Credits: Var[1-18] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 694  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 698  Research  Credits: Var[1-18] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 701  Occupation and Rehabilitation Science III  Credits: 3 (0-0-3)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 707  Practicum  Credits: Var[1-4] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 710  Teaching Occupation and Rehab Science  Credits: 3 (0-0-3)
Course Description: Design and implementation of teaching and learning philosophies and approaches in occupation and rehabilitation science contexts.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
OT 784  Supervised College Teaching  Credits: Var[1-4] (0-0-0)
Course Description: Design and implementation of teaching and learning philosophies and approaches in occupation and rehabilitation science contexts.
Prerequisite: None.
Registration Information: Admission into a PhD program.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 786  Practicum  Credits: Var[1-9] (0-0-0)
Course Description: Design and implementation of teaching and learning philosophies and approaches in occupation and rehabilitation science contexts.
Prerequisite: None.
Restriction: OT 620, may be taken concurrently.
Registration Information: Concurrent enrollment in OT 620 or 3 credits of qualitative research.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 792  Seminar  Credits: 3  (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 794  Independent Study  Credits: 6  (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 796  Group Study  Credits: 6  (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 799  Dissertation  Credits: Var[1-15]  (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

### Master of Science in Occupational Therapy, Plan A

#### Requirements

**Effective Fall 2015**

<table>
<thead>
<tr>
<th>First Year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td>Total Credits</td>
</tr>
<tr>
<td>OT 601</td>
<td>Occupation and Rehabilitation Science I</td>
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<tr>
<td>OT 610</td>
<td>Professional Decision Making</td>
</tr>
<tr>
<td>OT 620&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Research to Practice I</td>
</tr>
<tr>
<td>OT 686A</td>
<td>Fieldwork I: OT Process</td>
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<td><strong>Total Credits</strong></td>
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<tr>
<td><strong>Spring</strong></td>
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</tr>
<tr>
<td>OT 630</td>
<td>Occupational Performance: Adult to Old Age</td>
</tr>
<tr>
<td>OT 636</td>
<td>Occupational Performance: Adult/Old Age</td>
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<tr>
<td>OT 640&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Research to Practice II</td>
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<tr>
<td>OT 660</td>
<td>Occupational Performance: Adult/Old Age</td>
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<td>OT 665</td>
<td>Adult to Old Age Lab</td>
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<th>Select 12 credits from the following:</th>
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<tr>
<td>OT 686C</td>
<td>Fieldwork I: Adult to Old Age</td>
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<th>Second Year</th>
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<tbody>
<tr>
<td><strong>Fall</strong></td>
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<tr>
<td>OT 611</td>
<td>Reflective and Evidence-Based Practice</td>
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<tr>
<td>OT 621</td>
<td>Occupational Performance: Infancy-Childhood</td>
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<tr>
<td>OT 631</td>
<td>Program Assessment and Development</td>
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<tr>
<td>OT 699</td>
<td>Thesis</td>
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<tr>
<th><strong>Spring</strong></th>
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<tbody>
<tr>
<td>OT 641</td>
<td>Occupation and Rehabilitation Science II</td>
</tr>
<tr>
<td>OT 661</td>
<td>Occupational Performance: Adolescent-Young Adult</td>
</tr>
<tr>
<td>OT 686D</td>
<td>Fieldwork I: Infancy to Young Adult</td>
</tr>
<tr>
<td>OT 699</td>
<td>Thesis</td>
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<td><strong>Total Credits</strong></td>
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<th>Select 12 credits from the following:&lt;sup&gt;2&lt;/sup&gt;</th>
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<tbody>
<tr>
<td>OT 688A</td>
<td>Fieldwork II: Acute In-Patient</td>
</tr>
<tr>
<td>OT 688B</td>
<td>Fieldwork II: Rehab In-Patient</td>
</tr>
<tr>
<td>OT 688C</td>
<td>Fieldwork II: SNF/Acute LTC</td>
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<td><strong>Total Credits</strong></td>
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Master of Occupational Therapy, Plan C (M.O.T.)

Requirements

Effective Spring 2015

First Year

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>OT 688D</td>
<td>Fieldwork IIB: General Rehab Out-Patient</td>
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<td>OT 688E</td>
<td>Fieldwork IIB: Hand Therapy Hospital Out-Patient</td>
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<td>OT 688F</td>
<td>Fieldwork IIB: Hand Therapy Private Out-Patient</td>
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<td>OT 688G</td>
<td>Fieldwork IIB: Psych In-Patient</td>
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<td>OT 688H</td>
<td>Fieldwork IIB: Combined Practice</td>
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<tr>
<td>OT 688I</td>
<td>Fieldwork IIB: Pediatric Hospital/Unit</td>
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<tr>
<td>OT 688J</td>
<td>Fieldwork IIB: Pediatric Hospital/Out-Patient</td>
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</tr>
<tr>
<td>OT 688K</td>
<td>Fieldwork IIB: Pediatric Community</td>
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<tr>
<td>OT 688L</td>
<td>Fieldwork IIB: Pediatric Out-Patient Clinic</td>
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<td>OT 688M</td>
<td>Fieldwork IIB: Behavioral Health Community</td>
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</tr>
<tr>
<td>OT 688N</td>
<td>Fieldwork IIB: Older Adult Community</td>
<td></td>
</tr>
<tr>
<td>OT 688O</td>
<td>Fieldwork IIB: Older Adult Day Program</td>
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<tr>
<td>OT 688P</td>
<td>Fieldwork IIB: Adult Day Program</td>
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<td>OT 688Q</td>
<td>Fieldwork IIB: Home Health</td>
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<tr>
<td>OT 688R</td>
<td>Fieldwork IIB: School Early Intervention</td>
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<tr>
<td>OT 688S</td>
<td>Fieldwork IIB: School (PK-12)</td>
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<tr>
<td>OT 688T</td>
<td>Fieldwork IIB: Other</td>
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Total Credits: 12

Program Total Credits: 71

A minimum of 71 credits are required to complete this program.

A 3-credit research course outside the department may be substituted with faculty advisor approval.

May also be taken in the Fall.
OT 661  Occupational Performance: Adolescent-Young Adult  3

OT 686D  Fieldwork I: Infancy to Young Adult  1

Elective Out-of-Department  3

Total Credits  10

Summer
Select 12 credits from the following:  12

OT 688A  Fieldwork IIB: Acute In-Patient
OT 688B  Fieldwork IIB: Rehab In-Patient
OT 688C  Fieldwork IIB: SNF/Acute LTC
OT 688D  Fieldwork IIB: General Rehab Out-Patient
OT 688E  Fieldwork IIB: Hand Therapy Hospital Out-Patient
OT 688F  Fieldwork IIB: Hand Therapy Private Out-Patient
OT 688G  Fieldwork IIB: Psych In-Patient
OT 688H  Fieldwork IIB: Combined Practice
OT 688I  Fieldwork IIB: Pediatric Hospital/Unit
OT 688J  Fieldwork IIB: Pediatric Hospital/Out-Patient
OT 688K  Fieldwork IIB: Pediatric Community
OT 688L  Fieldwork IIB: Pediatric Out-Patient Clinic
OT 688M  Fieldwork IIB: Behavioral Health Community
OT 688N  Fieldwork IIB: Older Adult Community
OT 688O  Fieldwork IIB: Older Adult Day Program
OT 688P  Fieldwork IIB: Adult Day Program
OT 688Q  Fieldwork IIB: Home Health
OT 688R  Fieldwork IIB: School Early Intervention
OT 688S  Fieldwork IIB: School (PK-12)
OT 688T  Fieldwork IIB: Other

Total Credits  12

Program Total Credits:  68

A minimum of 68 credits are required to complete this program.

1 Select one 3-credit elective from a department list of approved courses.
2 May also be taken in the Fall.

Ph.D. in Occupation and Rehabilitation Science

Requirements
Effective Fall 2012

Ph.D. course requirements include a minimum of 72 credits for each of three entry routes:

Entry A: For students enrolled in the continuous Master’s/Ph.D. degree program in occupational therapy at CSU, 18 credits of the CSU M.S. degree in Occupational Therapy will apply toward partial fulfillment of the required 72 credits.

Entry B: For students who submit a previously earned Master’s degree, up to 30 credits may be accepted toward partial fulfillment of the required 72 credits. All potential credits accepted toward partial fulfillment of the requirements below must be approved by the student’s graduate committee, the Department of Occupational Therapy, and the Graduate School.

Entry C: For students who do not submit a Master’s degree in partial fulfillment of the required 72 credits, up to 10 credits earned after the bachelor’s degree maybe accepted for transfer. Only courses taken at a 500-level or higher will be considered. All potential credits accepted toward partial fulfillment of the requirements below must be approved by the student’s graduate committee, the Department of Occupational Therapy, and the Graduate School.

Code  Title  Credits
Occupation and Rehabilitation Science Core
OT 601  Occupation and Rehabilitation Science I  3
OT 641  Occupation and Rehabilitation Science II  3
OT 701  Occupation and Rehabilitation Science III  3
OT 792  Seminar  2

Research Core
OT 620  Research to Practice I  3
OT 640  Research to Practice II  3
Select one group from the following:  9
Group A:
OT 786  Practicum  1
OT 699  Thesis
Group B:
OT 786  Practicum  1
or OT 699  Thesis

Advanced Quantitative or Qualitative Research  4  3

Academic Career Core
OT 710  Teaching Occupation and Rehab Science  3
HDFS 592  Grant Writing-Human Services and Research  1.3
or NB 771  Writing, Submitting, and Reviewing Grants

Electives
Directed Electives  5  18.20
A minimum of 72 credits are required to complete this program.

1. Students enrolled in the continuous M.S./Ph.D. program receive credit from their M.S. toward the Ph.D. for these courses.
2. OT 792 will be taken two or more times for a total of 6 credits.
3. Students may substitute 3 credits of qualitative research for OT 620 and 3 credits of quantitative research for OT 640 with approval of graduate committee and the department.
4. With approval of graduate committee, select three credits of advanced research from the following departments/academic units: Human Development and Family Studies, Psychology, School of Education, Sociology, or Statistics.
5. With approval of graduate committee, select enough elective credits to bring program total to a minimum of 72 credits from the following departments/academic units: Occupational Therapy, Anthropology, Biomedical Science, Computer Science, Health and Exercise Science, Human Development and Family Studies, Neurobiology, Psychology, School of Education, School of Social Work, Statistics.

The Social Work curriculum focuses on the practical application of social work principles, research, policies, and practices within human rights and social justice perspectives. Students acquire a professional social work knowledge-based skills and values transferable to different settings, population groups, and problem areas. Students apply a person-in-environment lens to engage and intervene with social systems locally, nationally, and globally. Several practical experiences are required through intensive internship programs. Both the BSW and MSW programs are accredited by the Council on Social Work Education.

Undergraduate Majors
- Major in Social Work

Graduate Programs in Social Work
The School of Social Work offers an M.S.W. degree and a Ph.D. in Social Work. The MSW degree is accredited by the Council on Social Work Education, with an emphasis in advanced generalist practice. The Ph.D. prepares students for academic positions or for careers in research. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the School of Social Work (http://www.ssw.chhs.colostate.edu).

Certificates
- Advanced Clinical Behavioral Health
- Conflict Resolution and Mediation
- Military and Veteran Culture
- Nonprofit Administration
- PreK-12 School Social Worker

Master Programs
- Master of Social Work
Ph.D.

- Ph.D. in Social Work

Courses

Social Work (SOWK)

SOWK 110 Contemporary Social Welfare (GT-SS1) Credits: 3 (2-0-1)
Course Description: Principles, values and institutions of U.S. social welfare in context of human need within family, groups, and society.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 150 Introduction to Social Work Credits: 3 (3-0-0)
Course Description: Introduction to social work; history of social welfare in the U.S.; overview of knowledge, values, skills, practice settings and populations served.
Prerequisite: (PSY 100, may be taken concurrently) and (SOC 100, may be taken concurrently or SOC 105, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.

SOWK 233 Human Behavior in the Social Environment Credits: 3 (3-0-0)
Course Description: Understanding human behavior theory relevant to social work practice.
Prerequisite: HDFS 101, may be taken concurrently and SOWK 150, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.

SOWK 233B Human Behavior in the Social Environment Credits: 3 (3-0-0)
Course Description: Understanding human behavior theory relevant to social work practice.
Prerequisite: HDFS 101, may be taken concurrently and SOWK 150, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.

SOWK 286A Practicum I Credits: 3 (0-0-3)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior.
Prerequisite: SOWK 233, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.

SOWK 286B Practicum II Credits: 3 (0-0-3)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior.
Prerequisite: SOWK 233, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.

SOWK 300 Research in Applied Professions Credits: 3 (3-0-0)
Course Description: Application of social science research methodology to applied professions including problem formulation, research design, and data collection.
Prerequisite: None.
Registration Information: Completion of AUCC 1B Mathematics requirement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.

SOWK 300 Human Diversity Practice Issues Credits: 3 (3-0-0)
Course Description: Knowledge about human differences and similarities essential for social work practice.
Prerequisite: SOWK 233, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 340 Generalist Practice-Individuals and Families Credits: 3 (0-0-3)
Course Description: Knowledge and techniques used in applying the generalist planned change process to individual and family system assessments and interventions.
Prerequisite: SOWK 286B, may be taken concurrently.
Registration Information: Progression into the major.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 341 Generalist Practice-Small Groups Credits: 3 (0-0-3)
Course Description: Within a generalist framework, focuses on the knowledge, skills and competencies needed for the planned change process in groups.
Prerequisite: SOWK 340, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.

SOWK 342 Generalist Practice-Organizations/Communities Credits: 3 (1-0-2)
Course Description: Knowledge regarding the planned change process with organizations and communities.
Prerequisite: SOWK 340, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.

SOWK 350 Legal Issues in Human Services Credits: 3 (0-0-3)
Course Description: Legal principles, procedures, and issues relevant to social work including policy research and courtroom testimony.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 352 Indigenous Women, Children and Tribes Credits: 3 (3-0-0)
Course Description: Historical and contemporary lives of women, children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both SOWK 352 and ETST 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371A Social Work with Selected Populations: Children and Families Credits: 3 (3-0-0)
Course Description: Application of practice processes with children and families.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 371B Social Work with Selected Populations: Juvenile Offenders Credits: 3 (3-0-0)
Course Description: Application of practice processes with juvenile offenders.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371C Social Work with Selected Populations: Adult Offenders Credits: 3 (3-0-0)
Course Description: Application of practice processes with adult offenders.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371D Social Work with Selected Populations: Substance Abusers Credits: 3 (3-0-0)
Course Description: Application of practice processes with substance abusers.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371E Social Work with Selected Populations: Social Gerontology Credits: 3 (3-0-0)
Course Description: Application of practice processes with selected populations.
Prerequisite: HDFS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Assist instructor in teaching selected classes, group training, or discussion group leadership.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 410 Social Welfare Policy Credits: 3 (2-0-1)
Course Description: Issues and processes shaping social welfare institutions; definitions of social welfare policy; analytical framework for policy analysis.
Prerequisite: SOWK 342, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 450 International Social Welfare and Development Credits: 3 (2-0-1)
Also Offered As: IE 450.
Course Description: Framework of social welfare and development in international area; social need with focus on cultures/countries in transition.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOWK 450 and IE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 482A Social Work in Costa Rica Credits: 3 (1-0-2)
Course Description: International social work practice through exposure to culturally diverse communities in Costa Rica. Examine social problems, social action, and social injustice in the context of global interdependence.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Enrollment in Bachelor of Social Work or Master of Social Work degree program. Completed letter of application.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 488 Field Placement Credits: Var[5-10] (0-0-0)
Course Description: Engagement, assessment, interventions, and evaluation at multiple levels of service as well as mastery of foundation practice roles.
Prerequisite: SOWK 300 and SOWK 341 and SOWK 330 and SOWK 410.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

SOWK 492 Seminar Credits: 3 (0-0-3)
Course Description: Integrates theory with social work core competencies and practice behaviors while in field placement.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 495 Independent Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
SOWK 500 Principles and Philosophy of Social Work Credits: 3 (3-0-0)
Course Description: Knowledge, values, history, and philosophy of social work.
Prerequisite: None.
Registration Information: Admission to the MSW program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 511 Generalist Practice-Small Client Systems Credits: 3 (0-0-3)
Course Description: Generalist practice perspective. Practice knowledge and skills related to intervention with individuals and families within a systems framework.
Prerequisite: SOWK 500, may be taken concurrently and SOWK 515, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 515 Theoretical Foundations for Social Work Credits: 4 (3-0-1)
Course Description: Socio-behavioral principles relevant to generalist social work practice.
Prerequisite: SOWK 500, may be taken concurrently.
Registration Information: Blended format course is a partial-semester course. Lecture will be online and recitation will be face-to-face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 550 Animal Assisted Therapy/Human-Animal Bond Credits: 3 (2-0-1)
Course Description: Nature of human-animal bond and animal assisted therapy as an intervention method.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 551 Fundamentals of Mediation Credits: 3 (1-0-2)
Course Description: Knowledge and skills essential to the successful application of mediation for a wide variety of interpersonal conflicts.
Prerequisite: None.
Registration Information: Bachelor's degree. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 552 Conflict Management: Health and Elder Care Credits: 3 (1-0-2)
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in healthcare and eldercare settings.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 553 Multi-Party Conflict Resolution Credits: 3 (2-0-1)
Course Description: Theories, models, and skills required for design and guidance of multi-party conflict resolution in group, community and organizational settings.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 554 Conflict Resolution in the Workplace Credits: 3 (1-0-2)
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in the workplace.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 555 Divorce and Family Mediation Credits: 3 (1-0-2)
Course Description: Knowledge and skills essential to the practice of family mediation including divorce and child custody.
Prerequisite: SOWK 551.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 556 Social Work Practice in Schools Credits: 3 (0-0-3)
Course Description: Knowledge and skills essential to the practice of social work in educational settings. Topics explored: historical, legal, structural, and cultural context of social work in schools, the impact of disability on an individual and a family, and current issues challenging the practitioner in school settings.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only. Completed master's degree in social work or enrollment in a master's in social work program.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 561 School/Community: People with Disabilities Credits: 3 (0-0-3)
Course Description: Teamwork approach to serving persons with special needs; values, issues and best practices related to creating desirable futures for them.
Prerequisite: None.
Registration Information: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 571 Small Client Systems: Theory and Practice Credits: 3 (2-0-1)
Course Description: Theories and practice principles relevant to social work practice with small client systems.
Prerequisite: None.
Registration Information: May be concurrently offered with STAT 100.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 588 Field Placement Credits: Var[1-6] (0-0-0)
Course Description: Supervised professional practice.
Prerequisite: SOWK 512, may be taken concurrently and SOWK 611, may be taken concurrently.
Registration Information: Maximum of 6 credits allowed in course.
Term Offered: Spring.
Grade Mode: Instructors Options.
Special Course Fee: Yes.

SOWK 590 Workshop Credits: Var[1-6] (0-0-0)
Course Description: Theories and practice principles relevant to social work practice with large client systems.
Prerequisite: None.
Registration Information: Must be a: Graduate, Professional.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 601 Methods of Research I Credits: 3 (0-0-0)
Course Description: Social work research: role of practitioners as consumers and initiators of research.
Prerequisite: STAT 100 to 799 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 602B Macro-Level Social Work Practice Research Credits: 2 (0-0-2)
Course Description: Design and proposal of needs assessment, program evaluation, or community research.
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 602A Macro-Level Social Work Practice Research Credits: 2 (0-0-2)
Course Description: Implementation of proposed needs assessment, program evaluation, or community research.
Prerequisite: SOWK 602A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 603A Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 603B Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 603A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 611 Generalist Practice-Large Client Systems Credits: 3 (1-0-2)
Course Description: Practice knowledge and skills related to intervention with task groups, coalitions, organizations, and communities.
Prerequisite: SOWK 511.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 630  Advanced Generalist Practice with Individuals  Credits: 2 (1-0-1)
Course Description: Knowledge and skills appropriate for clinical assessments and interventions with individuals focusing on contemporary theoretical constructs.
Prerequisite: (SOWK 588 and SOWK 611 or SOWK 571 and SOWK 572) and (SOWK 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 631  Advanced Practice with Communities  Credits: 2 (1-0-1)
Course Description: Knowledge, skills, and values regarding the planned change process with communities.
Prerequisite: (SOWK 588 or SOWK 571 and SOWK 572) and (SOWK 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 632  Advanced Practice: Manager/Administrator  Credits: 3 (1-0-2)
Course Description: Knowledge, values, and skills of organizational practice for a social work manager/administrator.
Prerequisite: (SOWK 588 or SOWK 571 and SOWK 572) and (SOWK 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 633  Advanced Practice: Social Welfare Policy  Credits: 2 (0-0-2)
Course Description: Application of social welfare policy analysis models; normative aspects of policy analysis and assessment skills.
Prerequisite: (SOWK 601) and (SOWK 571 and SOWK 572 or SOWK 520 and SOWK 588 and SOWK 611).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 634  Advanced Practice with Families and Groups  Credits: 3 (1-0-2)
Course Description: Apply engagement, assessment, and intervention skills, theoretical models, and evidence-based practice approaches in work with families and groups.
Prerequisite: SOWK 630.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 640  Contemporary Issues in Military Culture  Credits: 3 (0-0-3)
Course Description: Exploration of multiple issues informing social work practice with military and veteran populations including ethical decision making in military social work, resources for veterans, challenges faced by women in the military, secondary trauma, and problems veterans face, such as homelessness, addiction, reintegration, mental illness, suicide. Military culture, the different branches of the military, and generational differences among military personnel will be examined.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 641  Military Family Systems  Credits: 3 (0-0-3)
Course Description: Exploration of effectively engaging with military families. Strategies to assess and intervene with military and veteran couples, children, and families will be examined. Exploration of topics of integration and reintegration; grief, loss, and bereavement; family-centered programs; support of guard/reserve families; deployment; support of veteran caregivers; and effective interventions through a systems framework.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 642  Clinical Intervention with Military Personnel  Credits: 3 (0-0-3)
Course Description: Clinical framework for working with members of the military including active duty, veterans, and military families, applied to examine common diagnoses and effective interventions, including post-traumatic stress disorder, traumatic brain injury, substance abuse, and suicide. Cognitive behavioral therapy, reactive exposure behavioral therapy, exposure therapy, rehabilitation, animal-assisted therapy, and additional therapies will be investigated.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 643  Contemporary Issues in Military Culture  Credits: 3 (0-0-3)
Course Description: Exploration of multiple issues informing social work practice with military and veteran populations including ethical decision making in military social work, resources for veterans, challenges faced by women in the military, secondary trauma, and problems veterans face, such as homelessness, addiction, reintegration, mental illness, suicide. Military culture, the different branches of the military, and generational differences among military personnel will be examined.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 660  Nonprofit Program Development  Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit program development and management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 661 Nonprofit Financial Development  Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit financial development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 662 Nonprofit Volunteer Development & Management  Credits: 3 (0-0-3)
Course Description: Theoretical framework for understanding volunteerism and practice skills for building and managing an effective volunteer program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 675 Psychopathology and Community Health  Credits: 3 (0-0-3)
Course Description: Foundation for diagnosing mental and emotional disorders relevant to community behavioral health practice with individuals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 676 Psychopharmacology and Community Health  Credits: 3 (0-0-3)
Course Description: Foundation in psychopharmacology (i.e. prescribed psychotropic drugs) for non-medically trained professionals practicing in behavioral health.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree. This is a partial-semester course. Online only course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 677 Trauma-Informed Care  Credits: 3 (0-0-3)
Course Description: Establishes a foundation for providing trauma mental health services to individuals, families, groups and organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree. This is a partial-semester course. Online only course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 684 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 10 credits allowed.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 688 Field Placement  Credits: Var[1-8] (0-0-0)
Course Description: Integrates and applies competencies and measurable practice behaviors comprising knowledge, values, and skills in social work practice.
Prerequisite: SOWK 512 and SOWK 601 or SOWK 571 and SOWK 572.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

SOWK 695 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 696 Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 698 Research  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
SOWK 701 Contemporary Issues-Social Work Education Credits: 3 (1-0-2)
Course Description: Issues and trends currently impacting professional education for social work practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. MSW degree.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 702 Social Welfare Policies in Selected Countries Credits: 3 (1-0-2)
Course Description: Social welfare policy analysis and impact on professional social work practice.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 703 Theoretical Analysis of Social Work Practice Credits: 3 (1-0-2)
Course Description: Social work practice theories; building, evaluating, and teaching for social work educators.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 704 Theoretical Foundations of Social Work Credits: 3 (1-0-2)
Course Description: Nature and processes of theory building in social work. Issues of epistemology, logic, political and moral philosophy.
Prerequisite: SOWK 701.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 705 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Graduate Certificate in Advanced Clinical Behavioral Health
The Certificate in Advanced Clinical Behavioral Health will increase the competence and accountability of MSW students, social work professionals, and eligible individuals from other disciplines as they work with clients and interdisciplinary teams around assessment, diagnosis, medication, and trauma.

Effective Fall 2015
Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SOWK 675</td>
<td>Psychopathology and Community Health</td>
<td>3</td>
</tr>
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</tr>
<tr>
<td>SOWK 677</td>
<td>Trauma-Informed Care</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 9

*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

Graduate Certificate in PreK-12 School Social Worker
This certificate provides social workers the opportunity to not only obtain the foundational credentials required by the Colorado Department of Education (CDE) to be a special services provider in the PreK-12 setting, but additional specialized coursework built into the program to boost employment marketability.

Effective Fall 2015
Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>SOWK 551</td>
<td>Fundamentals of Mediation</td>
<td>3</td>
</tr>
<tr>
<td>SOWK 560</td>
<td>Social Work Practice in Schools</td>
<td>3</td>
</tr>
<tr>
<td>SOWK 561</td>
<td>School/Community: People with Disabilities</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 9
*This certificate may have courses in common with other graduate certificates. A student may earn more than one certificate, but a given course may be counted only in one certificate.

**Major in Social Work**

Social work is distinguished by a tradition of concern for people and their interactions with society. Social work professionals are community problem solvers who intervene in organizational settings, communities, social service agencies, groups, individuals, and families with goals of enhancing well-being and promoting social and economic justice. Most social workers are employed in fields such as child welfare and family services, mental health, medical social work, school social work, corrections, community organization, or advocacy.

The Social Work curriculum focuses on the practical application of social work principles, policies, and practices within human rights and social justice perspectives. Students acquire a professional social work foundation transferable to different settings, population groups, and problem areas. Attention is devoted to understanding the social welfare system in the U.S., and working with individuals, families, and communities to affect desired change. Several practical experiences are required. Students work with an agency participant throughout their sophomore year, and then as seniors, participate in a social work agency internship. The curriculum also includes a strong liberal arts base in social science research and statistics, arts, humanities, social science, and natural sciences.

CSU students are admitted to the School of Social Work (SSW) when they declare Social Work as a major. Two professional organizations, The National Association of Social Workers (NASW) and the Council on Social Work Accreditation (CSWE) guide social work practice and education. The NASW develops the Code of Ethics for practicing social workers. The CSWE accredits bachelors and masters social work educational programs in the United States. The BSW program is accredited by CSWE.

**Learning Outcomes**

Graduating seniors will have demonstrated:

- Skills in conceptualizing and applying knowledge of social welfare policy and services, a systems perspective, theory, community resources, and community policy-making processes and practices.
- Knowledge and mastery of the foundation competencies as required by the CSWE for accreditation of the BSW degree.
- An understanding of the social work code of ethics including mastery of skills in maintaining client confidentiality, establishing professional boundaries, and resolving ethical dilemmas that are presented in case situations.

**Potential Occupations**

Social Work graduates are employed in a variety of settings including welfare agencies, schools, hospitals, clinics, institutions, community centers, public health, corrections, and group homes. Entry-level job opportunities are plentiful. Graduates should be willing to work with people of all ages and in a multitude of circumstances and settings. Opportunities to work with older adults are especially prevalent. Internships are required. Graduates of the BSW program are eligible to apply for advanced standing in MSW social work programs.

Some examples of career opportunities include, but are not limited to: child welfare worker, adolescent group home counselor, crisis counselor, child protection worker, adult protection worker, geriatric social worker, case manager, nursing home administrator, medical social service counselor, community outreach coordinator, youth program counselor, home health worker, occupational social services worker, foster parent consultant, probation officer, client advocate, victim-witness program counselor, program manager, substance abuse counselor, domestic violence counselor, or adoption worker.

**Progression in the Major**

Progression in the Major in the SSW is guided by standards required by both NASW (http://socialworkers.org/pubs/code/code.asp) and CSWE (http://cswe.org/File.aspx?id=41861) to ensure compliance with accreditation standards and that SSW students meet nationally recognized ethical requirements for their profession.

The NASW (http://socialworkers.org/pubs/code/code.asp) Code of Ethics requires that social workers act ethically in their work with clients. It also requires that social workers take action when their colleagues are not acting competently or ethically. The CSWE (http://cswe.org/File.aspx?id=41861) requires that social work programs describe the procedures for informing students of the program’s criteria for evaluating students’ academic and professional performance and that they have policies and procedures for terminating students’ enrollment in the social work program for reasons of academic and professional performance.

To meet the requirements of these professional governing bodies, the SSW has developed this Progression in the Major procedure. Progression in the Major is a time in a student’s academic career when faculty and students can review each student’s character and fitness for the profession of social work. Prior to enrolling in the 300 level practice courses (SOWK 340, SOWK 341, SOWK 342), students must apply for Progression in the Major. Approval of the Progression in the Major application is a prerequisite for enrollment in SOWK 340. Generally students who have 60 or more credits must apply for progression in order to graduate in the following four semesters. The application for Progression in the Major will be distributed in SOWK 286A and SOWK 286B.

As a professional program, academic performance and fitness to proceed in the SSW program requires a minimum grade point average, completion of required course work, and behaviors appropriate to the performance of social work. Problems in student performance may be addressed with the student at any time in the student’s academic career in the SSW.

**Student Expectations for Progression:**

- Maintain a minimum GPA of 2.5 in SOWK course work; a grade of C or better in all SOWK coursework; 2.0 in overall university course work; 2.0 in All University Core Curriculum (AUCC) course work.
- Demonstrate conduct that complies with the CSU Student Code of Conduct.
- Demonstrate conduct that adheres to the NASW Code of Ethics and social work values in interactions with faculty, peers, the community, organizations and clients.
- Remain free of criminal convictions while enrolled in the SSW and CSU.
- Refrain from substance use that interferes with the performance of responsibilities to clients and agencies and/or interferes with classroom performance.
- Demonstrate behavior that prioritizes the welfare of those to whom the student has a responsibility such as clients and coworkers.
• Refrain from any behaviors that cause harm to clients, including romantic or sexual relationships.

• Demonstrate respect for all persons and appreciation for race, age, color, religion, national origin or ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, or gender identity or expression.

• Demonstrate sound judgment, both in work with clients and in regard to oneself, such as seeking professional help for physical and emotional problems that interfere with professional functioning.

• Demonstrate honesty and integrity in work with client systems and in the classroom.

Review Process
Concerns regarding a student’s application for progression will be reported to the Director of the BSW Program. Concerns may be identified during the Progression in the Major application review process or at any time before or after progression. Progression applications will be reviewed by the Director of the BSW Program. Concerns regarding any of the foregoing student expectations will be addressed by the BSW Director directly with the student and the student’s advisor. Major concerns regarding the student’s ability to proceed in the program will be reviewed by the Director of the BSW program with the administrative team of the SSW, including but not limited to the Director of the SSW. A meeting will then be scheduled for review of the concerns with the student, faculty member(s) involved, the Director of the BSW Program and the Director of SSW. Review of concerns may result in one or more of the following resolutions, through the Director of SSW:

• Dismissal or resolution of the expressed concerns.

Practicum and Internship
Students directly apply classroom knowledge, skills, and social work values through a six-credit supervised practicum, SOWK 286A and SOWK 286B, in the sophomore year. In this practicum, students are matched with community agencies which require background checks before placement.

In the senior year, students fulfill a 10-credit field placement in a social work agency or program in a community setting. Field placement agencies generally require background checks also. Examples of available field placements include child and public welfare programs; hospitals, homeless and women’s shelters, rehabilitation and mental health agencies, schools, adolescent residential care, geriatric centers, and correction programs. In their field placement and under supervision, students have the opportunity to demonstrate the required CSWE competencies.

Requirements
Effective Spring 2015
All SOWK subject code courses required for the major in Social Work must have a minimum grade of C-.

Freshman
Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 120</td>
<td>Human Origins and Variation (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>SOC 105</td>
<td>Social Problems (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>SOWK 150</td>
<td>Introduction to Social Work</td>
<td>3</td>
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<tr>
<td>Mathematics 1</td>
<td>1B</td>
<td>3</td>
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<tr>
<td>ECON or POLS course</td>
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Elective: 5-6

Total Credits 30

Sophomore

Select one course from the following:

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>FSHN 125</td>
<td>Food and Nutrition in Health</td>
</tr>
<tr>
<td>FSHN 150</td>
<td>Survey of Human Nutrition</td>
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1 Mathematics includes MATH 135, 136, 140, or 141.
Major in Social Work

<table>
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<tr>
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<tbody>
<tr>
<td>HES 145</td>
<td>Health and Wellness</td>
<td></td>
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<tr>
<td>MIP 149</td>
<td>The Microbial World</td>
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<tr>
<td>PHIL 130</td>
<td>Bioethics and Society</td>
<td></td>
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<tr>
<td>PSY 228</td>
<td>Psychology of Human Sexuality</td>
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<td>SOWK 233</td>
<td>Human Behavior in the Social Environment</td>
<td>3</td>
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<tr>
<td>SOWK 286A</td>
<td>Practicum I</td>
<td>3</td>
</tr>
<tr>
<td>SOWK 286B</td>
<td>Practicum II</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B 3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A 3-4</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E 3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D 3</td>
</tr>
<tr>
<td>STAT ***</td>
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<td>Electives</td>
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Junior

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<tbody>
<tr>
<td>SOWK 300</td>
<td>Research in Applied Professions</td>
<td>3</td>
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<tr>
<td>SOWK 330</td>
<td>Human Diversity Practice Issues</td>
<td>3</td>
</tr>
<tr>
<td>SOWK 340</td>
<td>Generalist Practice-Individuals and Families</td>
<td>3</td>
</tr>
<tr>
<td>SOWK 341</td>
<td>Generalist Practice-Small Groups</td>
<td>3</td>
</tr>
<tr>
<td>Additional Arts and Humanities (see list below)</td>
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<td></td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>2 3</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B 3</td>
</tr>
<tr>
<td>Electives</td>
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<td>9</td>
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Senior

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<tbody>
<tr>
<td>SOWK 342</td>
<td>Generalist Practice-Organizations/Communities</td>
<td>4B 3</td>
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<td>SOWK 410</td>
<td>Social Welfare Policy</td>
<td>4A 3</td>
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<tr>
<td>SOWK 488</td>
<td>Field Placement</td>
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<td>SOWK 492</td>
<td>Seminar</td>
<td>4C 3</td>
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<td>Additional Social and Behavioral Sciences (See list below)</td>
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<td>Electives</td>
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Program Total Credits: 120

Additional Arts and Humanities Department List

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ETST 205</td>
<td>Ethnicity and the Media (GT-SS3)</td>
<td>3</td>
</tr>
<tr>
<td>ETST 234/E 234</td>
<td>Introduction to Native American Literature</td>
<td>3</td>
</tr>
<tr>
<td>ETST 239/E 239</td>
<td>Introduction to Chicano Literature</td>
<td>3</td>
</tr>
<tr>
<td>ETST 240</td>
<td>Native American Cultural Experience (GT-AH2)</td>
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</tr>
<tr>
<td>ETST 320</td>
<td>Ethnicity and Film: Asian-American Experience</td>
<td>3</td>
</tr>
<tr>
<td>ETST 354</td>
<td>Black Cinema and Media</td>
<td>3</td>
</tr>
<tr>
<td>ETST 413</td>
<td>Queer Creative Expressions</td>
<td>3</td>
</tr>
<tr>
<td>ETST 425</td>
<td>Indigenous Film and Video</td>
<td>3</td>
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<tr>
<td>ETST 430</td>
<td>Latina/o Creative Expression</td>
<td>3</td>
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<tr>
<td>ETST 438/E 438</td>
<td>Native American Literature</td>
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<tr>
<td>ETST 454/SPCM 454</td>
<td>Chicano/a Film and Video</td>
<td>3</td>
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<tr>
<td>JTC 316</td>
<td>Multiculturalism and the Media</td>
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Additional Social and Behavioral Sciences Department List

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<tbody>
<tr>
<td>ANTH 319</td>
<td>Latin American Peasantries</td>
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<tr>
<td>ETST 300</td>
<td>Queer Studies and Women of Color</td>
<td>3</td>
</tr>
<tr>
<td>ETST 310</td>
<td>African-American Studies</td>
<td>3</td>
</tr>
<tr>
<td>ETST 324</td>
<td>Asian-Pacific Americans and the Law</td>
<td>3</td>
</tr>
<tr>
<td>ETST 332</td>
<td>Contemporary Chicana/o Issues</td>
<td>3</td>
</tr>
<tr>
<td>ETST 352/SOWK 352</td>
<td>Indigenous Women, Children, and Tribes</td>
<td>3</td>
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<tr>
<td>ETST 364/HIST 364</td>
<td>Asian American Social Movements, 1945-Present</td>
<td>3</td>
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<tr>
<td>ETST 365</td>
<td>Global Environmental Justice Movements</td>
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<tr>
<td>ETST 370</td>
<td>Caribbean Identities</td>
<td>3</td>
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<tr>
<td>ETST 371</td>
<td>The Modern Caribbean</td>
<td>3</td>
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<td>ETST 404</td>
<td>Race Formation in the United States</td>
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<tr>
<td>ETST 405</td>
<td>Ethnicity, Class, and Gender in the U.S.</td>
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<td>ETST 410</td>
<td>African American Periods and Personalities</td>
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<td>ETST 411</td>
<td>Black Feminism(s)</td>
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<td>ETST 412</td>
<td>Africa and African Diaspora</td>
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<tr>
<td>ETST 414</td>
<td>Development in Indian Country</td>
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<td>or ANTH 414</td>
<td>Development in Indian Country</td>
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<tr>
<td>ETST 432</td>
<td>Latina/o Routes to Empowerment</td>
<td>3</td>
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<td>ETST 444</td>
<td>Federal Indian Law and Policy</td>
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<tr>
<td>or SOC 444</td>
<td>Federal Indian Law and Policy</td>
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</tbody>
</table>

1. MATH 101 is recommended.
2. At least one of the courses must be a human or animal biology course.
3. Select any three credit Statistics course.
4. Select six credits from the list of courses in category 3B in the All-University Core Curriculum (AUCC). With approval of advisor an additional three credits from category 3B or from the following subject codes: ART, D, E, ETST (see Additional Arts and Humanities department list), L***, MU, PHIL, SPCM, and TH.
5. Select six upper-division credits, with approval of advisor, from the following prefixes: ANTH, ECON, ETST (see Additional Social and Behavioral Sciences department list), HIST, HDFS, POLS, PSY, and SOC.
6. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Grade of C# or above required in all SOWK subject code courses; 2.500 overall GPA required in Social Work. MATH 101 recommended.

Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>ANTH 120</td>
<td>Human Origins and Variation (GT-SC2)</td>
<td>3A</td>
<td>3A</td>
<td>3-4</td>
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<tr>
<td>BZ 101</td>
<td>Humans and Other Animals (GT-SC2)</td>
<td>3A</td>
<td>3A</td>
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<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>3A</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
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<td>3</td>
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<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>X</td>
<td>3C</td>
<td></td>
</tr>
<tr>
<td>SOC 105</td>
<td>Social Problems (GT-SS3)</td>
<td>X</td>
<td>3C</td>
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<td>Elective</td>
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### Semester 2

<table>
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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>HDFS 101</td>
<td>Individual and Family Development (GT-SS3)</td>
<td>X</td>
<td>3C</td>
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<tr>
<td>SOWK 150</td>
<td>Introduction to Social Work</td>
<td>X</td>
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<td>ECON or POLS Course</td>
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<tr>
<td>Mathematics</td>
<td></td>
<td>X</td>
<td>1B</td>
<td></td>
<td>3</td>
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<tr>
<td>Elective</td>
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<td></td>
<td></td>
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<td>2-3</td>
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<td>CO 150, PSY 100, and SOC 100 or SOC 105 must be completed by the end of Semester 2.</td>
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Total Credits: 14-15

### Sophomore

#### Semester 3

<table>
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</thead>
<tbody>
<tr>
<td>SOWK 233</td>
<td>Human Behavior in the Social Environment</td>
<td>X</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>SOWK 286A</td>
<td>Practicum I</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td></td>
<td>3</td>
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<td>Biological and Physical Sciences</td>
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<td></td>
<td>3A</td>
<td></td>
<td>4</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td></td>
<td>3E</td>
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Total Credits: 16

#### Semester 4

Select one course from the following:

- FSHN 125 Food and Nutrition in Health
- FSHN 150 Survey of Human Nutrition
- HES 145 Health and Wellness
- MIP 149 The Microbial World
- PHIL 130 Bioethics and Society
- PSY 228 Psychology of Human Sexuality
- SOWK 286B Practicum II | X | 3
- STAT*** | | 3
- Historical Perspectives | | 3D | 3
- Electives | | 3-4 |

Progression to Major is strongly recommended by the end of Semester 4. | X |

Total Credits: 14-15

### Junior

#### Semester 5

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>SOWK 330</td>
<td>Human Diversity Practice Issues</td>
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<td>SOWK 340</td>
<td>Generalist Practice-Individuals and Families</td>
<td>X</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
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<td>Electives</td>
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<tr>
<td>SOWK 150, SOWK 233, SOWK 286A must be completed by the end of Semester 5.</td>
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Progression to Major must be completed by the end of Semester 5. | X |

Total Credits: 15

#### Semester 6

<table>
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<tr>
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<tbody>
<tr>
<td>SOWK 300</td>
<td>Research in Applied Professions</td>
<td>X</td>
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<tr>
<td>SOWK 341</td>
<td>Generalist Practice-Small Groups</td>
<td>X</td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
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<tr>
<td>Elective</td>
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<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Arts and Humanities (See Department List on Major Requirements tab)</td>
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<tr>
<td>SOWK 286B, SOWK 330 must be completed by the end of Semester 6.</td>
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Total Credits: 15
Master of Social Work

The Master of Social Work degree offered by CSU features a nationally recognized advanced generalist curriculum. Students are prepared for roles as social work practitioners in complex, diverse, and dynamic settings and learn to promote human rights and individual, community, and global well-being. The School of Social Work offers different programs options for completing the MSW degree. There are four campus-based programs, two distance learning options, and a dual degree MSW-MPH. All of our program options utilize a cohort model.

1. **Full-time two year** - This is the standard two year program. It follows the cohort model, starting every fall. Students attend full-time for four semesters - fall, spring, and the following fall and spring on campus, in-person instruction. (Schedule here (http://www.ssw.chhs.colostate.edu/students/graduate/oncampusMSW/schedule_fulltime.aspx).)

2. **Part-time three year days** - This option begins in fall and takes three years to complete, breaking down the first full-time year into two part-time years. During the majority of these years, students attend classes on campus either Monday or Tuesday of each week, with the field placement falling in their fourth semester. The final year is still a full-time year, as the field placement requirement cannot be reduced. The schedule (http://www.ssw.chhs.colostate.edu/students/graduate/oncampusMSW/schedule_parttime.aspx) for this final year is identical to the full-time program’s second year.

3. **Part-time evenings** - This part-time format takes 27 months to complete and begins during the summer term. Classes are hybrid which means that 50-75% of class time is online. During most terms, in-person classes will take place on Tuesday and Thursday evenings starting at 5:00 p.m. every other week. This format operates on a cohort model which currently admits students every other year. The next cohort will start in Summer 2018.

4. **Advanced Standing On Campus** - This option is available only to those who have earned a BSW from a program accredited by the Council on Social Work Education and have earned that degree within the past seven years. The BSW degree must be granted prior to the beginning of advanced standing classes. Students attend one full year consisting of three semesters, starting with the summer term. (Schedule here (http://www.ssw.chhs.colostate.edu/students/graduate/oncampusMSW/schedule_advancedstanding.aspx).)

5. **Distance Learning options** - The School of Social Work also offers a part-time hybrid program that utilizes online and in-person instruction based at the cohort location of either Denver or Colorado Springs.
   a. The Denver cohort begins January 2017 (application deadline 6/1/16) with Advanced Standing beginning in January 2018 (application deadline 6/1/17).
   b. The next Colorado Springs cohort is projected to begin in January 2018 (application deadline 6/1/17) with Advanced Standing beginning in January 2019 (application deadline 6/1/18). For more information visit the Distance MSW Program (http://www.ssw.chhs.colostate.edu/students/graduate/distanceMSW) section.

6. **MSW/MPH Dual Degree** - In partnership with Colorado School of Public Health, the School of Social Work will be offering a dual degree MSW-MPH program. For information visit the MSW/MPH section (http://www.ssw.chhs.colostate.edu/students/graduate/MPH/indexMPH.aspx).

The MSW program is accredited by the Council on Social Work Education, which enables students to pursue professional licensure upon program completion. Additionally, our program is approved by the Colorado Department of Education for school social work licensure, for those students who elect to complete the additional course requirement (SOWK 560) or seek our graduate certificate in PreK-12 School Social Work.

Requirements Effective Fall 2012

**First Year**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Total Credits</th>
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<tbody>
<tr>
<td><strong>Foundation Curriculum:</strong></td>
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</tr>
<tr>
<td>SOWK 500</td>
<td>Principles and Philosophy of Social Work</td>
</tr>
<tr>
<td>SOWK 511</td>
<td>Generalist Practice-Small Client Systems</td>
</tr>
<tr>
<td>SOWK 515</td>
<td>Theoretical Foundations for Social Work</td>
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</tbody>
</table>
Ph.D. in Social Work

Requirements
Effective Spring 2012

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SOWK 520</td>
<td>Social Welfare Policy Analysis</td>
<td>3</td>
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<tr>
<td>SOWK 600</td>
<td>Methods of Research I</td>
<td>3</td>
</tr>
<tr>
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<td><strong>Total Credits</strong></td>
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**Spring**

Foundation Curriculum:

<table>
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<tbody>
<tr>
<td>SOWK 512</td>
<td>Small Client Systems Skills Laboratory</td>
<td>1</td>
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<tr>
<td>SOWK 588</td>
<td>Field Placement</td>
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<tr>
<td>SOWK 601</td>
<td>Methods of Research II</td>
<td>3</td>
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<tr>
<td>SOWK 611</td>
<td>Generalist Practice- Large Client Systems</td>
<td>3</td>
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<td>Elective</td>
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Second Year

**Fall**

Concentration Curriculum:

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<tbody>
<tr>
<td>SOWK 602A</td>
<td>Macro-Level Social Work Practice Research</td>
<td>2-3</td>
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<tr>
<td>SOWK 603A</td>
<td>Direct Practice: Assessment and Evaluation</td>
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<td>SOWK 699</td>
<td>Thesis</td>
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<tr>
<td>SOWK 630</td>
<td>Advanced Generalist Practice with Individuals</td>
<td>2</td>
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<tr>
<td>SOWK 631</td>
<td>Advanced Practice with Communities</td>
<td>2</td>
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<tr>
<td>SOWK 633</td>
<td>Advanced Practice: Social Welfare Policy</td>
<td>2</td>
</tr>
<tr>
<td>SOWK 688</td>
<td>Field Placement</td>
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<tr>
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**Spring**

Concentration Curriculum:

Select one from the following:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SOWK 602B</td>
<td>Macro-Level Social Work Practice Research</td>
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<td>SOWK 603B</td>
<td>Direct Practice: Assessment and Evaluation</td>
<td></td>
</tr>
<tr>
<td>SOWK 699</td>
<td>Thesis</td>
<td></td>
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<tr>
<td>SOWK 632</td>
<td>Advanced Practice: Manager/Administrator</td>
<td>3</td>
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<tr>
<td>SOWK 634</td>
<td>Advanced Practice with Families and Groups</td>
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<td>SOWK 688</td>
<td>Field Placement</td>
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Program Total Credits: 60-65

A minimum of 60 credits are required to complete this program.
College of Liberal Arts

Dean’s Office
Clark Building, Room C138
(970) 491-5421
libarts.colostate.edu (http://libarts.colostate.edu)

Professor Ben Withers, Dean
Professor Roze Hentschell, Interim Associate Dean for Undergraduate Studies
Professor Bruce Ronda, Associate Dean
Professor Michael Carolan, Associate Dean

Undergraduate Majors
- Anthropology
- Art (B.A.)
- Art (B.F.A.)
- Communication Studies
- Dance
- Economics
- English
- Ethnic Studies
- History
- Journalism and Media Communication
- Languages, Literatures, and Cultures
- Music (B.A.)
- Music (B.M.)
- Philosophy
- Political Science
- Sociology
- Theatre

Interdisciplinary Majors
- Major in International Studies
- Major in Interdisciplinary Liberal Arts

Dual Degree Programs
- Majors in Engineering Science (B.S.) and International Studies (B.A.)
- Majors in Interdisciplinary Liberal Arts (B.A.) and Engineering Science (B.S.)

Undergraduate Minors
- Anthropology
- Applied Environmental Policy Analysis
- Chinese
- Criminology and Criminal Justice
- Economics
- English
- Ethnic Studies
- French
- Geography
- German
- History
- Japanese
- Media Studies
- Music
- Philosophy
- Political Science
- Religious Studies
- Sociology
- Spanish
- Technical and Science Communication

Interdisciplinary and Interdepartmental Minors
- Arabic Studies Interdisciplinary Minor
- Arts Leadership and Administration Interdisciplinary Minor
- Environmental Affairs Interdisciplinary Minor
- Film Studies Interdisciplinary Minor
- Italian Studies Interdisciplinary Minor
- Legal Studies Interdisciplinary Minor
- Linguistics and Culture Interdisciplinary Minor
- Music, Stage and Sports Production Interdisciplinary Minor
- Religious Studies Interdisciplinary Minor
- Russian Studies Interdisciplinary Minor
- Women’s Study Interdisciplinary Minor

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs
- Master’s Programs
  - Master in Arts Leadership and Cultural Management, Plan C

The College of Liberal Arts aims to educate committed and active citizens and to develop in them an understanding of humans, including their history, literature, and art; their social, political, and economic systems; and their relationship to the environment. The College offers courses in the arts, humanities, and social sciences, which constitute the foundation of a liberal arts education.

College Programs
Undergraduate majors lead to one of three degrees: Bachelor of Arts, Bachelor of Fine Arts, or Bachelor of Music. Descriptions of the specific departmental and interdepartmental majors and concentrations in the College of Liberal Arts are located in the following pages.

Students should consider simultaneously completing the requirements of a second major or a departmental or interdisciplinary minor, either in the College of Liberal Arts or in another college. With careful planning, numerous combinations are possible within four years of study.

The minimum scholastic average acceptable for graduation in any college program is a 2.000 average in all major courses in addition to the
Undergraduate Career Opportunities and Career Counseling

Graduates from the College of Liberal Arts enter a remarkable variety of careers. Degrees from the College of Liberal Arts prepare students for success in their professional, personal, and civic lives. The skills and dispositions students develop through study in the liberal arts are widely sought. In preparing themselves for future career opportunities students are encouraged to work closely with Academic Support Coordinators, departmental mentors, and career counselors. Through these conversations students will be encouraged to develop resumes, interviewing skills, and articulation of the ways in which their skills will benefit potential employers. Students should also consider participating in internships to gain practical work experience.

Career Center
career.colostate.edu (http://career.colostate.edu)
(970) 491-5707

Prelaw
Clark C, Room 336B
(970) 491-0704
courtenay.daum@colostate.edu

Prelaw adviser, Dr. Courtenay Daum

Students preparing for law school can choose any major. Law schools seek above-average students with broad educational backgrounds and excellent communication, and analytical capabilities. Prelaw students, regardless of major, should design a course of study that develops their skills in speaking, writing and analytical capabilities. Law schools require an undergraduate degree for admission. Visit the Department of Political Science (http://politicalscience.colostate.edu/undergraduate/pre-law) for more information.

Education Abroad

Because the knowledge of at least one other culture is valuable in understanding our own, students are encouraged to take a semester or longer to study outside of the United States to gain a broader perspective on the world. coursework requirements vary by major, but may be obtained from any participating department. The International Studies major is an interdisciplinary program designed to help students understand the nature of diverse cultures and peoples. There are four concentrations: Asian Studies, European Studies, Latin American Studies, and Middle East and North African Studies. Courses are required in foreign language, geography, political science, economics, history, and international studies, with other elective courses chosen from these and many more disciplines across the college and university.

Learning Outcomes

Graduates of the International Studies major will demonstrate that they are competent and capable in:

• Writing effectively about the themes of International Studies and related fields
• Communicating cross-culturally through written and oral expression
• Thinking critically about international issues
• Applying an interdisciplinary approach to knowledge

Potential Occupations

Graduates in International Studies apply their education in a wide variety of careers, including those in international business, nonprofit organizations, academics, public policy, law, government, city planning, engineering, environmental sustainability and clean energy, information systems, journalism, publishing, education, sales and marketing, management and administration, artistic production, mass media, communications, museums, entertainment, foreign service, and many other areas in need of intelligent, well-rounded, and broadly world-educated people. Some International Studies graduates enter graduate or professional schools for more specialized study in either international studies or one of many other disciplines. To enhance their career opportunities, majors are encouraged to consider participating in paid or volunteer work or internship opportunities, and to study abroad.

Concentrations

• Asian Studies Concentration
• European Studies Concentration
• Latin American Studies Concentration
• Middle East and North African Studies Concentration
# Major in International Studies, Asian Studies Concentration

## Requirements

### Effective Spring 2017

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>INST 200</td>
<td>Interdisciplinary Approaches to Globalization</td>
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<tr>
<td></td>
<td>Select one group from the following:</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Group A:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LCHI 105</td>
<td>First-Year Chinese I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LCHI 107</td>
<td>First-Year Chinese II</td>
<td></td>
<td></td>
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<tr>
<td>Group B:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LJPN 105</td>
<td>First-Year Japanese I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LJPN 107</td>
<td>First-Year Japanese II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td>3E</td>
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#### Arts and Humanities

<table>
<thead>
<tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
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<tr>
<td></td>
<td>Mathematics</td>
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**Total Credits: 31**

#### Sophomore

Select one from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
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<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 120</td>
<td>Asian Civilizations I (GT-HI1)</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>HIST 121</td>
<td>Asian Civilizations II (GT-HI1)</td>
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Select one course from the following not taken elsewhere:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HIST 120</td>
<td>Asian Civilizations I (GT-HI1)</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>HIST 121</td>
<td>Asian Civilizations II (GT-HI1)</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>HIST 440</td>
<td>Modern South Asia: Colonialism and Nationalism</td>
<td></td>
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<tr>
<td>HIST 451</td>
<td>Medieval China and Central Asia</td>
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Select one group from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<th>Credits</th>
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<td>Group A:</td>
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<td>Second-Year Chinese I (GT-AH4)</td>
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<td>LCHI 201</td>
<td>Second-Year Chinese II (GT-AH4)</td>
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<td>Group B:</td>
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<tr>
<td>LJPN 200</td>
<td>Second-Year Japanese I (GT-AH4)</td>
<td>3B</td>
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<tr>
<td>LJPN 201</td>
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#### International Studies Major Course Selection

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<tr>
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<td></td>
<td>Advanced Writing</td>
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<tr>
<td></td>
<td>Biological and Physical Sciences</td>
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**Total Credits: 32**

#### Junior

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<tbody>
<tr>
<td>INST 301</td>
<td>Global Commodities across the Disciplines</td>
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Select one group from the following:

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Group A:
LCHI 304  Third-Year Chinese I
LCHI 305  Third-Year Chinese II

Group B:
LJPN 304  Third-Year Japanese I
LJPN 305  Third-Year Japanese II

International Studies Major Course Selection

<table>
<thead>
<tr>
<th>Arts and Humanities</th>
<th>3B</th>
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Total Credits: 30

Senior

<table>
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<tr>
<th>INST 492 Seminar</th>
<th>4A,4C</th>
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<td>Electives</td>
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Total Credits: 13-15

Program Total Credits: 25-27

International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics of Asia; at least 6 credits from 2. Thought and Cultures of Asia; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

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<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>1. History and Politics of Asia</td>
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<td>Select a minimum of 6 credits from the following:</td>
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<tr>
<td>HIST 440</td>
<td>Modern South Asia: Colonialism and Nationalism</td>
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<tr>
<td>HIST 441</td>
<td>South Asia Since Independence</td>
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<tr>
<td>HIST 450</td>
<td>Ancient China</td>
<td></td>
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<tr>
<td>HIST 451</td>
<td>Medieval China and Central Asia</td>
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<tr>
<td>HIST 452</td>
<td>China in the Modern World, 1600-Present</td>
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<tr>
<td>HIST 455</td>
<td>Tokugawa and Modern Japan, 1600-Present</td>
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<tr>
<td>HIST 456</td>
<td>East Asia in the Age of Empire, 1800-Present</td>
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<tr>
<td>HIST 464</td>
<td>Pacific Wars: Philippines-WWII</td>
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<tr>
<td>HIST 465</td>
<td>Pacific Wars: Korea and Vietnam</td>
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<tr>
<td>HIST 466</td>
<td>U.S.-China Relations Since 1800</td>
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<tr>
<td>HIST 533</td>
<td>Reading Seminar: East Asia</td>
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<tr>
<td>HIST 534</td>
<td>Reading Seminar: South Asia</td>
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<tr>
<td>IE 271</td>
<td>India</td>
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<td>POLS 445</td>
<td>Comparative Asian Politics</td>
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2. Thought and Cultures of Asia

Select a minimum of 6 credits from the following:

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<tbody>
<tr>
<td>ANTH 312</td>
<td>Modern Indian Culture and Society</td>
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<tr>
<td>ANTH 314</td>
<td>Southeast Asian Cultures and Societies</td>
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<tr>
<td>ART 316</td>
<td>Art of the Pacific</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 356</td>
<td>Asian Literature</td>
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<tr>
<td>LCHI 250</td>
<td>Chinese Language, Literature, Culture in Translation (GT-AH2)</td>
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or LJPN 250  Japanese Language, Literature, Culture in Translation (GT-AH2)

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>LCHI 309</td>
<td>Contemporary Chinese Literature and the Arts</td>
</tr>
<tr>
<td>LCHI 365</td>
<td>Introduction to Chinese Cinema Studies</td>
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<tr>
<td>or LGEN 465B</td>
<td>Studies in Foreign Film: Asia</td>
</tr>
<tr>
<td>or LJPN 365</td>
<td>Introduction to Japanese Cinema Studies</td>
</tr>
<tr>
<td>LCHI 496</td>
<td>Group Study-Chinese</td>
</tr>
<tr>
<td>LJPN 404</td>
<td>Historical Aspects of the Language and Society</td>
</tr>
<tr>
<td>LJPN 496</td>
<td>Group Study-Japanese</td>
</tr>
<tr>
<td>PHIL 172</td>
<td>Religions of the East</td>
</tr>
<tr>
<td>PHIL 349</td>
<td>Philosophies of East Asia</td>
</tr>
<tr>
<td>PHIL 360</td>
<td>Topics in Asian Philosophy</td>
</tr>
<tr>
<td>PHIL 371</td>
<td>Contemporary Eastern Religious Thought</td>
</tr>
<tr>
<td>PHIL 379</td>
<td>Mysticism East and West</td>
</tr>
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</table>

3. International Studies

Select a minimum of 3 credits from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>AGRI 270/IE 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
</tr>
<tr>
<td>AM 430</td>
<td>International Retailing</td>
</tr>
<tr>
<td>AM 460</td>
<td>Historic Textiles</td>
</tr>
<tr>
<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
</tr>
<tr>
<td>ANTH 352</td>
<td>Geoarchaeology</td>
</tr>
<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
</tr>
<tr>
<td>ANTH 422/SOC 422</td>
<td>Comparative Legal Systems</td>
</tr>
<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
</tr>
<tr>
<td>ANTH 479/IE 479</td>
<td>International Development Theory and Practice</td>
</tr>
<tr>
<td>AREC 240/ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
</tr>
<tr>
<td>AREC 415</td>
<td>International Agricultural Trade</td>
</tr>
<tr>
<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
</tr>
<tr>
<td>BUS 350</td>
<td>Travel Abroad-International Comparative Management</td>
</tr>
<tr>
<td>CON 450/INTD 450</td>
<td>Travel Abroad-Sustainable Building</td>
</tr>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<tr>
<td>ECON 332/POLS 332</td>
<td>International Political Economy</td>
</tr>
<tr>
<td>ECON 370</td>
<td>Comparative Economic Systems</td>
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<tr>
<td>ECON 440</td>
<td>Economics of International Trade and Policy</td>
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<tr>
<td>ECON 442</td>
<td>Economics of International Finance and Policy</td>
</tr>
<tr>
<td>ECON 460</td>
<td>Economic Development</td>
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<tr>
<td>FIN 475</td>
<td>International Business Finance</td>
</tr>
<tr>
<td>GR 320</td>
<td>Cultural Geography</td>
</tr>
<tr>
<td>HIST 463</td>
<td>Science and Technology in Modern History</td>
</tr>
<tr>
<td>HIST 470</td>
<td>World Environmental History, 1500-Present</td>
</tr>
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<td>Course Title</td>
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<tr>
<td>HIST 471</td>
<td>History of Antarctica, 1800-Present</td>
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<tr>
<td>IE 179</td>
<td>Globalization: Exploring Our Global Village (GT-SS3)</td>
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<tr>
<td>IE 370</td>
<td>Model United Nations</td>
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<tr>
<td>IE 450/SOWK 450</td>
<td>International Social Welfare and Development</td>
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<tr>
<td>IE 470</td>
<td>Women and Development</td>
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<tr>
<td>IE 471</td>
<td>Children and Youth in Global Context</td>
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<tr>
<td>IE 472</td>
<td>Education for Global Peace</td>
</tr>
<tr>
<td>JTC 412</td>
<td>International Mass Communication</td>
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<tr>
<td>MGT 475</td>
<td>International Business Management</td>
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<td>MKT 365</td>
<td>International Marketing</td>
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<td>NRRT 320</td>
<td>International Issues-Recreation and Tourism</td>
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<td>POLS 362</td>
<td>Global Environmental Politics</td>
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<td>POLS 431</td>
<td>International Law</td>
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<td>POLS 433</td>
<td>International Organization</td>
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<td>POLS 435</td>
<td>United States Foreign Policy</td>
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<td>POLS 436</td>
<td>Comparative Foreign Policy</td>
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<td>POLS 437</td>
<td>International Security</td>
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<td>SOC 364</td>
<td>Agriculture and Global Society</td>
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<tr>
<td>SOC 429</td>
<td>Comparative Urban Studies</td>
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<tr>
<td>SOC 482A</td>
<td>Travel Abroad: Comparative Criminal Justice</td>
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<tr>
<td>SOC 482B</td>
<td>Travel Abroad: Crime and Deviance</td>
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<tr>
<td>SPCM 434</td>
<td>Intercultural Communication</td>
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</tbody>
</table>

1. Course(s) selected may not be used here and for All-University Core Curriculum (AUCC) 3D or 3E or in International Studies Major Course Selection courses.
2. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 credits must be upper-division (300-to 400-level).
3. Credit allowed for only one of the following: LCHI 365, LGEN 465B, LJPN 365.
4. To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.

## Major Completion Map

### Freshman

**Semester 1**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<td>College Composition (GT-CO2)</td>
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<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
<td>X</td>
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Select one course from the following:

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>LCHI 105</td>
<td>First-Year Chinese I</td>
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<tr>
<td>LJPN 105</td>
<td>First-Year Japanese I</td>
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</table>

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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</table>

**Total Credits** 17

**Semester 2**

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>INST 200</td>
<td>Interdisciplinary Approaches to Globalization</td>
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Select one course from the following:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>LCHI 107</td>
<td>First-Year Chinese II</td>
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<tr>
<td>LJPN 107</td>
<td>First-Year Japanese II</td>
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<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
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<tr>
<td>Mathematics</td>
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**Total Credits** 17
CO 150 must be completed by the end of Semester 2.

### Total Credits

14

#### Sophomore

##### Semester 3

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<tr>
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<tr>
<td>AREC 202 Agricultural and Resource Economics (GT-SS1)</td>
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<tr>
<td>ECON 202 Principles of Microeconomics (GT-SS1)</td>
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<td>Select one course from the following:</td>
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<tr>
<td>HIST 120 Asian Civilizations I (GT-HI1)</td>
<td>3D</td>
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<tr>
<td>HIST 121 Asian Civilizations II (GT-HI1)</td>
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<td>Select one course from the following:</td>
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<tr>
<td>LCHI 200 Second-Year Chinese I (GT-AH4)</td>
<td>3B</td>
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<tr>
<td>LJPN 200 Second-Year Japanese I (GT-AH4)</td>
<td>3B</td>
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International Studies Major Course Selection (See list on Concentration Requirements Tab)

<table>
<thead>
<tr>
<th>Biological and Physical Sciences</th>
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<tbody>
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LCHI 105 or LJPN 105 must be completed by the end of Semester 3.

### Total Credits

17

##### Semester 4

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<th>Credits</th>
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<tr>
<td>Select one course from the following not previously taken:</td>
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<tr>
<td>HIST 120 Asian Civilizations I (GT-HI1)</td>
<td>3D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIST 121 Asian Civilizations II (GT-HI1)</td>
<td>3D</td>
<td></td>
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<tr>
<td>HIST 440 Modern South Asia: Colonialism and Nationalism</td>
<td></td>
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<tr>
<td>HIST 451 Medieval China and Central Asia</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>LCHI 201 Second-Year Chinese II (GT-AH4)</td>
<td>3B</td>
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<tr>
<td>LJPN 201 Second-Year Japanese II (GT-AH4)</td>
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Advanced Writing

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<tbody>
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ECON 202 or AREC 202 and LCHI 107 or LJPN 107 must be completed by the end of Semester 4.

### Total Credits

15

#### Junior

##### Semester 5

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<th>AUCC</th>
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<tr>
<td>INST 301 Global Commodities across the Disciplines</td>
<td>X</td>
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Select one course from the following:

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<tr>
<td>3A</td>
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</table>

LCHI 304 Third-Year Chinese I

<table>
<thead>
<tr>
<th>LJPN 304 Third-Year Japanese I</th>
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International Studies Major Course Selection (See list on Concentration Requirements Tab)

<table>
<thead>
<tr>
<th>Elective</th>
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LCHI 200 or LJPN 200 and HIST 120 or HIST 121 must be completed by the end of Semester 5.

### Total Credits

15

##### Semester 6

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<th>AUCC</th>
<th>Credits</th>
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<td>Select one course from the following:</td>
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<tr>
<td>LCHI 305 Third-Year Chinese II</td>
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<tr>
<td>LJPN 305 Third-Year Japanese II</td>
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International Studies Major Course Selection (See list on Concentration Requirements Tab)

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<th>Biological and Physical Sciences</th>
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</table>

Arts and Humanities

<table>
<thead>
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Elective

<table>
<thead>
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<th>Elective</th>
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<tbody>
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</table>
Major in International Studies, European Studies Concentration

Effective Spring 2017

Freshman

CO 150  College Composition (GT-CO2)  3
GR 100  Introduction to Geography (GT-SS2)  3
INST 200  Interdisciplinary Approaches to Globalization  3
L*** 100 or 105 First-Year Language I  5
L*** 101 or 107 First-Year Language II  5
POLS 241  Comparative Government and Politics (GT-SS1)  3
Arts and Humanities  3
Historical Perspectives  3
Mathematics  3

Total Credits  31

Sophomore

Select one from the following:

- AREC 202  Agricultural and Resource Economics (GT-SS1)  3
- ECON 202  Principles of Microeconomics (GT-SS1)  3

Select one group from the following:

Group A:
- HIST 100  Western Civilization, Pre-Modern (GT-H11)  3
- HIST 101  Western Civilization, Modern (GT-H11)  3

Group B:
- Two HIST courses at the 200- and/or 300-level related to Europe  3
- L*** 200 Second-Year Language I  3
- L*** 201 Second-Year Language II  3
- Advanced Writing  3
International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics in Europe; at least 6 credits from 2. Thought and Cultures in Europe; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>1. History and Politics in Europe</td>
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<tr>
<td>Select a minimum of 6 credits from the following:</td>
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<tr>
<td>ECON 376</td>
<td>Marxist Economic Thought</td>
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<tr>
<td>HIST 300</td>
<td>Ancient Greece to 323 B.C.E.</td>
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<tr>
<td>HIST 301</td>
<td>Roman Republic</td>
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<td>HIST 302</td>
<td>Roman Empire</td>
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<tr>
<td>HIST 303</td>
<td>Hellenistic World: Alexander to Cleopatra</td>
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<tr>
<td>HIST 304</td>
<td>Women in Ancient Greece and Rome</td>
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<tr>
<td>HIST 310</td>
<td>Medieval Europe</td>
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<td>HIST 311</td>
<td>Medieval England</td>
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<tr>
<td>HIST 312</td>
<td>Women in Medieval Europe</td>
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<td>HIST 315</td>
<td>Tudor Stuart England, 1485-1689</td>
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<td>HIST 317</td>
<td>Renaissance and Reformation Europe</td>
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<td>HIST 318</td>
<td>The Age of the Enlightenment</td>
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<td>HIST 319</td>
<td>Early Modern France, 1500-1789</td>
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<td>HIST 320</td>
<td>Women and Gender in Europe, 1450-1789</td>
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<td>HIST 321</td>
<td>Industrial Society in Europe, 1600-1871</td>
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<td>HIST 322</td>
<td>Industrial Society in Europe, 1871-1989</td>
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<td>HIST 323</td>
<td>Russia Before 1700</td>
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<td>HIST 324</td>
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<td>Modern Europe, 1815-1914</td>
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<td>HIST 329</td>
<td>Europe in Crisis, 1914-1941</td>
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<td>HIST 330</td>
<td>Eastern Europe Since 1918</td>
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<td>HIST 331</td>
<td>The Soviet Union</td>
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<td>HIST 332</td>
<td>Germany Since World War I</td>
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<td>HIST 333</td>
<td>Contemporary Europe</td>
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<tr>
<td>HIST 335</td>
<td>Britain in the 20th Century</td>
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<td>HIST 336</td>
<td>Germany from Napoleon to WWI</td>
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<td>HIST 339</td>
<td>World War II in Europe</td>
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<td>Rise and Fall of British Empire 1600-1947</td>
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<td>HIST 469</td>
<td>The Crusades</td>
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<td>POLS 341</td>
<td>Western European Government and Politics</td>
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<td>POLS 345</td>
<td>Russian, Central, and East European Politics</td>
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<td>POLS 420</td>
<td>History of Political Thought</td>
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<td>POLS 421</td>
<td>Contemporary Political Theories</td>
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### 2. Thought and Cultures in Europe
Select a minimum of 6 credits from the following: 6

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<td>ART 212</td>
<td>Art History III</td>
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<td>ART 410</td>
<td>Greek Art</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
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<tr>
<td>ART 412</td>
<td>History of Renaissance Art</td>
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<tr>
<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
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<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
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<tr>
<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
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<td>ART 417</td>
<td>Roman Art</td>
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<td>ART 420</td>
<td>Travel Abroad-Art History in Italy</td>
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<td>E 276</td>
<td>Survey of British Literature I (GT-AH2)</td>
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<td>Survey of British Literature II (GT-AH2)</td>
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<td>E 337</td>
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<td>Shakespeare I</td>
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<td>E 343</td>
<td>Shakespeare II</td>
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<td>English Renaissance</td>
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<td>British Romanticism</td>
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<td>Victorian Age</td>
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<td>E 430</td>
<td>18th-Century English Fiction</td>
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<td>19th-Century English Fiction</td>
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<td>E 432</td>
<td>20th-Century British Fiction</td>
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<td>E 443</td>
<td>English Renaissance Drama</td>
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<td>E 444</td>
<td>Restoration and 18th-Century Drama</td>
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<td>Modern British and European Drama</td>
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<td>E 452</td>
<td>Masterpieces of European Literature</td>
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<td>E 455</td>
<td>European Literature after 1900</td>
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<td>E 460</td>
<td>Chaucer</td>
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<td>E 463</td>
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<td>American Poetry Before 1900</td>
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<td>L*** 250</td>
<td>Language, Literature, Culture in Translation</td>
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<td>L*** 313</td>
<td>Introduction to Translation and Interpreting</td>
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<td>L*** 335</td>
<td>Issues in Culture</td>
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<td>L*** 345</td>
<td>Business Language</td>
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<td>L*** 355</td>
<td>20th Century Literature</td>
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<td>L*** 413</td>
<td>Advanced Translation and Interpreting</td>
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<td>L*** 441</td>
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<td>L*** 450</td>
<td>Selected Literary Movements and Periods</td>
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<td>Genre Studies</td>
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<td>Author Studies</td>
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<td>Topic Studies</td>
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<td>LFRE 433A</td>
<td>Advanced French/Francophone Culture: Representations</td>
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<td>LFRE 433B</td>
<td>Advanced French/Francophone Culture: Center and Margins</td>
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<td>LFRE 460</td>
<td>French/Francophone Women Writers</td>
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<td>LGEN 465C</td>
<td>Studies in Foreign Film: Europe</td>
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<tr>
<td>LGER 434</td>
<td>Advanced German Culture</td>
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<td>LSPA 437</td>
<td>Advanced Spanish Culture</td>
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<td>Spanish Theatre</td>
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<tr>
<td>MU 334</td>
<td>Music History I</td>
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<td>MU 335</td>
<td>Music History II</td>
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<tr>
<td>PHIL 300</td>
<td>Ancient Greek Philosophy</td>
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<tr>
<td>PHIL 301</td>
<td>17th and 18th Century European Philosophy</td>
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<td>PHIL 302</td>
<td>19th Century Philosophy</td>
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<td>PHIL 409</td>
<td>20th Century Philosophy</td>
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### 3. International Studies

Select a minimum of 3 credits from the following:

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<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AGRI 270/IE 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
<td>3E</td>
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<tr>
<td>AM 430</td>
<td>International Retailing</td>
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<td>AM 460</td>
<td>Historic Textiles</td>
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<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
<td>3E</td>
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<tr>
<td>ANTH 352</td>
<td>Geoarchaeology</td>
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<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
<td></td>
</tr>
<tr>
<td>ANTH 422/SOC 422</td>
<td>Comparative Legal Systems</td>
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<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
<td></td>
</tr>
<tr>
<td>ANTH 479/IE 479</td>
<td>International Development Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>AREC 240/ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>AREC 415</td>
<td>International Agricultural Trade</td>
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<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
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<td>BUS 350</td>
<td>Travel Abroad-International Comparative Management</td>
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<tr>
<td>CON 450/INTD 450</td>
<td>Travel Abroad-Sustainable Building</td>
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<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 332/POLS 332</td>
<td>International Political Economy</td>
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<td>ECON 370</td>
<td>Comparative Economic Systems</td>
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<td>ECON 440</td>
<td>Economics of International Trade and Policy</td>
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<td>ECON 442</td>
<td>Economics of International Finance and Policy</td>
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<td>ECON 460</td>
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<td>FIN 475</td>
<td>International Business Finance</td>
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<td>GR 320</td>
<td>Cultural Geography</td>
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<tr>
<td>HIST 463</td>
<td>Science and Technology in Modern History</td>
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<tr>
<td>HIST 470</td>
<td>World Environmental History, 1500-Present</td>
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<td>HIST 471</td>
<td>History of Antarctica, 1800-Present</td>
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<td>IE 179</td>
<td>Globalization: Exploring Our Global Village (GT-SS3)</td>
<td>3E</td>
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<td>IE 370</td>
<td>Model United Nations</td>
<td>3E</td>
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<tr>
<td>IE 450/SOWK 450</td>
<td>International Social Welfare and Development</td>
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<td>IE 470</td>
<td>Women and Development</td>
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<td>IE 471</td>
<td>Children and Youth in Global Context</td>
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<td>IE 472</td>
<td>Education for Global Peace</td>
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<td>JTC 412</td>
<td>International Mass Communication</td>
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<td>MKT 365</td>
<td>International Marketing</td>
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<td>NRRT 320</td>
<td>International Issues-Recreation and Tourism</td>
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<tr>
<td>POLS 362</td>
<td>Global Environmental Politics</td>
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<td>POLS 431</td>
<td>International Law</td>
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<td>POLS 433</td>
<td>International Organization</td>
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<td>POLS 435</td>
<td>United States Foreign Policy</td>
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<td>POLS 436</td>
<td>Comparative Foreign Policy</td>
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<td>International Security</td>
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<td>SOC 364</td>
<td>Agriculture and Global Society</td>
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<td>SOC 429</td>
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<td>SOC 482A</td>
<td>Travel Abroad: Comparative Criminal Justice 8</td>
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<td>SOC 482B</td>
<td>Travel Abroad: Crime and Deviance 8</td>
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<tr>
<td>SPCM 434</td>
<td>Intercultural Communication</td>
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</table>

1. L*** 100 or 105 and L*** 101 or 107 for French (LFRE), German (LGER), or Spanish (LSPA); L*** 105 and L*** 107 for Italian (LITA), or Russian (LRUS).
2. Select from the list of courses in category 3B in the All-University Core Curriculum (AUCC), except L*** 200 and L*** 201.
3. With approval of advisor. Courses selected may not count toward the History and Politics in Europe International Studies Major Course Selection requirement.
4. For students of Italian language, see advisor about fulfilling the 300-level language requirement. For students of Russian language, take LRUS 304 and LRUS 305.
5. Select enough elective credits to bring the program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).
6. French (LFRE), German (LGER), or Spanish (LSPA) only.
7. French (LFRE) or German (LGER) only.
8. To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.
# Major Completion Map

## Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
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<th>Credits</th>
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<td>X</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
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<td>3E</td>
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<td>Historical Perspectives</td>
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<td>3D</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
<td>X</td>
<td>1B</td>
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## Sophomore

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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
<td></td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
<td></td>
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<tr>
<td>L*** 200</td>
<td>Second-Year European Language I (See allowable subject codes on Concentration Requirements Tab)</td>
<td>3-4</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
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<td>Electives</td>
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<td>6-7</td>
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<td>L***105</td>
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## Semester 4

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<td>Select one group from the following:</td>
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<td>Group A:</td>
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<tr>
<td>HIST 100</td>
<td>Western Civilization, Pre-Modern (GT-HI1)</td>
<td>X</td>
<td>3D</td>
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<tr>
<td>HIST 101</td>
<td>Western Civilization, Modern (GT-HI1)</td>
<td>X</td>
<td>3D</td>
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<td>Group B:</td>
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<tr>
<td>Two HIST courses at the 200- and/or 300-level related to Europe</td>
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<td>X</td>
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<tr>
<td>L*** 201</td>
<td>Second-Year European Language II (See allowable subject codes on Concentration Requirements Tab)</td>
<td>3-4</td>
<td></td>
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<tr>
<td>Advanced Writing</td>
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<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>0-1</td>
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<td>AREC 202 or ECON 202, L*** 107</td>
<td>must be completed by the end of Semester 4.</td>
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<td>Total Credits</td>
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## Junior

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<th>Credits</th>
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<tr>
<td>INST 301</td>
<td>Global Commodities across the Disciplines</td>
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<td>4B</td>
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<td>L*** 300</td>
<td>Third-Year European Language I (See allowable subject codes on Concentration Requirements Tab)</td>
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<tr>
<td>International Studies Major Course Selection (See Department List on Concentration Requirements tab)</td>
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Elective

L*** 200 must be completed by the end of Semester 5.  

Total Credits 15

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<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>L*** 301 Third-Year European Language II (See allowable subject codes on Concentration Requirements Tab)</td>
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<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>International Studies Major Course Selection (See Department List on Concentration Requirements tab)</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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</table>

L*** 201 must be completed by the end of Semester 6.  

HIST 100/HIST 101 or 200/300-level European History must be completed by the end of Semester 6.

Total Credits 15

<table>
<thead>
<tr>
<th>Semester 7</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>INST 492 Seminar</td>
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<td>4A,4C</td>
<td>3</td>
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<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
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<td>6</td>
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</table>

L*** 300 must be completed by the end of Semester 7.  

Total Credits 15

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<tr>
<th>Semester 8</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
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<td>X</td>
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<tr>
<td>Electives</td>
<td></td>
<td>X</td>
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</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 11

Program Total Credits: 120

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**Major in International Studies, Latin American Studies Concentration Requirements**

### Effective Spring 2017

**Freshman**

<table>
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<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<td>GR 100</td>
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<tr>
<td>INST 200</td>
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<td>LSPA 101</td>
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<td>POLS 241</td>
<td>3E</td>
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</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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<tr>
<td>Mathematics</td>
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Total Credits 31

**Sophomore**

Select one from the following:  

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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
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</tbody>
</table>
International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics of Latin America; at least 6 credits from 2. Thought and Cultures of Latin America; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
</table>
| 1. History and Politics of Latin America
| Select a minimum of 6 credits from the following: |       |         |
| ETST 370 | Caribbean Identities                              |      | 6       |
| ETST 371 | The Modern Caribbean                               |      |         |
| HIST 410 | Colonial Latin America                             |      |         |
| HIST 411 | Latin America Since Independence                    |      |         |
| HIST 412 | Mexico                                              |      |         |
| HIST 414 | Revolutions in Latin America                        |      |         |
| HIST 460 | Slavery in the Americas                             |      |         |
| POLS 331 | Politics and Society Along Mexican Border           |      |         |
| POLS 446 | Politics of South America                           |      |         |
| POLS 447 | Politics in Mexico, Central America, Caribbean      |      |         |

2. Thought and Culture of Latin America

Select a minimum of 6 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
</table>

Program Total Credits: 120
### 3. International Studies

Select a minimum of 3 credits from the following:

<table>
<thead>
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AGRI 270/IE 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
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<tr>
<td>AM 430</td>
<td>International Retailing</td>
</tr>
<tr>
<td>AM 460</td>
<td>Historic Textiles</td>
</tr>
<tr>
<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
</tr>
<tr>
<td>ANTH 352</td>
<td>Geoarchaeology</td>
</tr>
<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
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<tr>
<td>ANTH 422/SOC 422</td>
<td>Comparative Legal Systems</td>
</tr>
<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
</tr>
<tr>
<td>ANTH 479/IE 479</td>
<td>International Development Theory and Practice</td>
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<tr>
<td>AREC 240/ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
</tr>
<tr>
<td>AREC 415</td>
<td>International Agricultural Trade</td>
</tr>
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<td>AREC 460</td>
<td>Ag- and Resource-Based Economic Development</td>
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<tr>
<td>BUS 350</td>
<td>Travel Abroad-International Comparative Management</td>
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<tr>
<td>CON 450/INTD 450</td>
<td>Travel Abroad-Sustainable Building</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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</tr>
<tr>
<td>ECON 332/POLS 332</td>
<td>International Political Economy</td>
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<td>ECON 370</td>
<td>Comparative Economic Systems</td>
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<td>ECON 440</td>
<td>Economics of International Trade and Policy</td>
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<tr>
<td>ECON 442</td>
<td>Economics of International Finance and Policy</td>
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<td>Economic Development</td>
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<tr>
<td>GR 320</td>
<td>Cultural Geography</td>
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<tr>
<td>HIST 463</td>
<td>Science and Technology in Modern History</td>
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<tr>
<td>HIST 470</td>
<td>World Environmental History, 1500-Present</td>
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<td>HIST 471</td>
<td>History of Antarctica, 1800-Present</td>
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<td>Globalization: Exploring Our Global Village (GT-SS3)</td>
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<td>IE 370</td>
<td>Model United Nations</td>
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<tr>
<td>IE 450/SOWK 450</td>
<td>International Social Welfare and Development</td>
</tr>
<tr>
<td>IE 470</td>
<td>Women and Development</td>
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<td>IE 471</td>
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<td>NRRT 320</td>
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<td>SOC 482A</td>
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<td>SOC 482B</td>
<td>Travel Abroad: Crime and Deviance 4</td>
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<tr>
<td>SPCM 434</td>
<td>Intercultural Communication</td>
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</table>

1. Select from the list of courses in category 3B of the All-University Core Curriculum (AUCC), except L*** 200 and L*** 201.
2. Courses selected here may not count toward the International Studies Major Course Selection requirement.
3. Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).
4. To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.

**Major Completion Map**

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
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<th>Credits</th>
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<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
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<td>INST 200</td>
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<td>LSPA 100</td>
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### Major in International Studies, Latin American Studies Concentration

<table>
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#### Semester 2

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<td>Historical Perspectives</td>
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<td>X</td>
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CO 150 must be completed by the end of Semester 2.

| **Total Credits** | 14|

#### Sophomore

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<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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Biological and Physical Sciences

International Studies Major Course Selection (See Department List on Concentration Requirements tab)

Elective

LSPA 105 must be completed by the end of Semester 3.

| **Total Credits** | 15|

#### Semester 4

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<td>Arts and Humanities</td>
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<td>Biological and Physical Sciences</td>
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<td>AREC 202 or ECON 202, LSPA 107 must be completed by the end of Semester 4.</td>
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| **Total Credits** | 16|

#### Junior

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LSPA 200 must be completed by the end of Semester 5.

| **Total Credits** | 15|

#### Semester 6

Select two courses from the following:

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<tr>
<td>HIST 410</td>
<td>Colonial Latin America</td>
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<td>HIST 412</td>
<td>Mexico</td>
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<td>HIST 414</td>
<td>Revolutions in Latin America</td>
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<td>LSPA 301</td>
<td>Oral Communication-Spanish</td>
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<tr>
<td>Elective</td>
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</table>

LSPA 201 must be completed by the end of Semester 6.

| **Total Credits** | 15|
Senior

Semester 7

<table>
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<tr>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>INST 492</td>
<td>Seminar</td>
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International Studies Major Course Selection (See Department List on Concentration Requirements tab)

Electives

LSPA 300 must be completed by the end of Semester 7.

Total Credits

Semester 8

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Electives

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits

Program Total Credits: 120

Major in International Studies, Middle East and North African Studies Concentration Requirements

Effective Spring 2017

Freshman

<table>
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<td>Introduction to Geography (GT-SS2)</td>
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<td>INST 200</td>
<td>Interdisciplinary Approaches to Globalization</td>
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<td>LARA 105</td>
<td>First-Year Arabic I</td>
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<td>LARA 107</td>
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<td>Comparative Government and Politics (GT-SS1)</td>
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<td>Historical Perspectives</td>
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Total Credits

Sophomore

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<td>AREC 202</td>
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<td>Principles of Microeconomics (GT-SS1)</td>
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<td>The Islamic World: Late Antiquity to 1500</td>
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<td>HIST 438</td>
<td>The Modern Middle East</td>
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<td>LARA 200</td>
<td>Second-Year Arabic I (GT-AH4)</td>
<td>3B</td>
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<td>Second-Year Arabic II (GT-AH4)</td>
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<td>Advanced Writing</td>
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<td>Biological and Physical Sciences</td>
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Total Credits
## Junior

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<td>LARA 300</td>
<td>Third Year Arabic</td>
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<td>LARA 301</td>
<td>Oral Communication - Arabic</td>
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## Senior

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**Program Total Credits:** 120

## International Studies Major Course Selection

Students must select a minimum total of 24 credits, 18 of which must be upper-division (300- to 400-level), from at least three subject codes, from the following groups of courses. Select at least 6 credits from 1. History and Politics of the Middle East and North Africa; at least 6 credits from 2. Thought and Cultures of the Middle East and North Africa; and at least 3 credits from 3. International Studies. Select an additional minimum of 9 credits from among the three groups to bring the total to 24.

### Code | Title | AUCC | Credits
--- | --- | --- | ---
1. History and Politics of the Middle East and North Africa

Select a minimum of 6 credits from the following:

- **HIST 303** Hellenistic World: Alexander to Cleopatra
- **HIST 421** Africa: Colonialism to Independence
- **HIST 422** Modern Africa
- **HIST 431** Ancient Israel
- **HIST 432** Sacred History in the Bible and the Qur'an
- **HIST 433** Muhammad and the Origins of Islam
- **HIST 435** Jihad and Reform in Islamic History
- **HIST 469** The Crusades
- **HIST 532** Reading Seminar: Middle East
- **POLS 449** Middle East Politics

### 2. Thought and Culture of the Middle East and North Africa

Select a minimum of 6 credits from the following:

- **LARA 250** Arabic Language, Literature, Culture in Translation (GT-AH2)
- **LGEN 465D** Studies in Foreign Film: Africa
- **PHIL 171** Religions of the West
- **PHIL 335** Islam: Cosmology and Practice
- **PHIL 379** Mysticism East and West
- **PHIL 455** Islamic Philosophy

### 3. International Studies

Select a minimum of 3 credits from the following:

- **AGRI 270/IE 270** World Interdependence-Population and Food (GT-SS3)
- **AM 430** International Retailing
- **AM 460** Historic Textiles
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<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
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<td>ANTH 422/SOC 422</td>
<td>Comparative Legal Systems</td>
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<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
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<td>ANTH 479/IE 479</td>
<td>International Development Theory and Practice</td>
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<td>Issues in Environmental Economics (GT-SS1)</td>
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<td>Ag- and Resource-Based Economic Development</td>
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<td>Travel Abroad-Sustainable Building</td>
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<td>Principles of Macroeconomics (GT-SS1)</td>
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<td>Globalization: Exploring Our Global Village (GT-SS3)</td>
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<td>Model United Nations</td>
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**Major Completion Map**

### Freshman

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**Sophomore**

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<td>Principles of Microeconomics (GT-SS1)</td>
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<tr>
<td>HIST 115</td>
<td>The Islamic World: Late Antiquity to 1500</td>
<td>3D</td>
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<td>LARA 200</td>
<td>Second-Year Arabic I (GT-AH4)</td>
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**Junior**

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<tbody>
<tr>
<td>INST 301</td>
<td>Global Commodities across the Disciplines</td>
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<tr>
<td>LARA 300</td>
<td>Third Year Arabic</td>
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<tr>
<td>International Studies Major Course Selection (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>Elective</td>
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1. Select from the list of courses in category 3B of the All-University Core Curriculum (AUCC), except L*** 200 and L*** 201.
2. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
3. To count toward the International Studies Major Course Selection, travel abroad must be to a country or area covered by this concentration.
HIST 115, LARA 200 must be completed by the end of Semester 5.  

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**Semester 6**

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<tr>
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<td>Oral Communication - Arabic</td>
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<td>Arts and Humanities</td>
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<td>HIST 438, LARA 201 must be completed by the end of Semester 6.</td>
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**Senior**

**Semester 7**

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<td>INST 492</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Program Total Credits:** 120

---

**Major in Interdisciplinary Liberal Arts**

Dean's Office  
Clark Building, Room C138  
(970) 491-5421  
libartsmajor.colostate.edu (http://libartsmajor.colostate.edu)

Kevin Foskin, Director

The Interdisciplinary Liberal Arts major is a degree program combining the humanities, the arts, languages and literature, and social sciences so as to foster interdisciplinary knowledge, core career competencies, personal development, professional excellence, interpersonal confidence and expertise, and a deeper understanding of the complex world in which we live. Interdisciplinary Liberal Arts majors can select between the Interdisciplinary Liberal Arts major and a five-year joint program with dual degrees in Liberal Arts (B.A.) and Engineering Science (B.S.).

To further increase depth and focus, and to enhance expertise and career opportunities, Interdisciplinary Liberal Arts students are required to complete a minor or an interdisciplinary minor from within the College of Liberal Arts.

**Learning Outcomes**

Students will demonstrate the following skills:

- Writing effectively about the knowledge and perspectives of their field of study, including
  a. organization in a manner that aids the readers' comprehension as well as the writer's purpose;
  b. use of accepted grammatical form, spelling, and punctuation;
  c. use of language in a style that is appropriate to the writer's purpose;
  d. effective support of claims; and
  e. clear citation of information sources.

- Speaking effectively, including
  a. creation of a logically constructed message;
  b. adaptation of that message to a particular audience;
  c. use of accepted grammatical forms of standard American English dialect;
  d. use of appropriate and engaging language; and
  e. use of effective delivery skills.

- Thinking critically about contemporary issues, particularly within their field of study, including
  a. description of a policy, position, or artifact;
  b. analysis of the policy, position, or artifact by identifying issues or articulating and then applying a critical framework or perspective; and
  c. clear articulation and support of conclusions based on that analysis/identification of issues.

**Potential Occupations**

Graduates in Interdisciplinary Liberal Arts apply their education in a wide variety of careers and/or academic professions, including public policy, politics, healthcare, artistic production, mass media, engineering, law, city planning, business, information systems, international business, journalism, publishing, education, sales and marketing, management and administration, government, communications, museum work,
entertainment, foreign service, and many others. Many continue on
to graduate or professional schools for more specialized study. To
enhance their career, academic or professional opportunities, majors
are encouraged to participate in paid or volunteer work or internship
opportunities.

Requirements

Effective Spring 2015

Second Field Requirement

Students in the Interdisciplinary Liberal Arts major must complete one of the following choices:

- A minor
- An interdisciplinary minor
- A second major
- 21 credits in a single language to include at least 6 upper-division (300- to 400-level) credits. At least 6 upper-division credits in this choice must be completed at CSU. (Completion of this choice is not transcripted.)

Freshman

<table>
<thead>
<tr>
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<td>Biological and Physical Sciences</td>
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<td>Historical Perspectives</td>
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<td>3D</td>
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<td>Mathematics</td>
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<td>Social and Behavioral Sciences</td>
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Sophomore

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<td>Biological and Physical Sciences</td>
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<td>Global and Cultural Awareness</td>
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Junior

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<tr>
<td>Upper-Division Arts and Humanities or Social Sciences</td>
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<tr>
<td>Advanced Writing</td>
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Senior

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<td>LB 455/SPCM 455</td>
<td>Narrative Fiction Film as a Liberal Art</td>
<td>4B</td>
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<td>LB 456/JTC 456</td>
<td>Documentary Film as a Liberal Art</td>
<td>4B</td>
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<tr>
<td>AUCC 4B course (see list below)</td>
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<td>LB 492</td>
<td>Liberal Arts Capstone Seminar</td>
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<td>3</td>
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<td>Upper-Division Arts and Humanities or Social Sciences</td>
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### Electives

Total Credits: 30

Program Total Credits: 120

#### AUCC 4B Approved Courses

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<tr>
<td>AMST 300/E 300</td>
<td>American Lives-Methods in American Studies</td>
<td>4B</td>
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<td>ANTH 400</td>
<td>History of Anthropological Thought</td>
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<td>ART 310</td>
<td>History of American Art to 1945</td>
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<td>ART 311</td>
<td>Art of Africa</td>
<td>4B</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
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<td>ART 314</td>
<td>Women in Art History</td>
<td>4B</td>
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<td>ART 315</td>
<td>United States Art 1945-1980</td>
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<td>ART 316</td>
<td>Art of the Pacific</td>
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<td>ART 410</td>
<td>Greek Art</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
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<td>ART 412</td>
<td>History of Renaissance Art</td>
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<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
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<td>ART 415</td>
<td>History of 19th Century European Art</td>
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<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
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<td>Roman Art</td>
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<td>E 341</td>
<td>Literary Criticism and Theory</td>
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<td>Intermediate Microeconomics</td>
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<td>Seminar</td>
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<td>Communications Law</td>
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<td>Narrative Fiction Film as a Liberal Art</td>
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<td>LFRE 492</td>
<td>Seminar-French Language, Literature, and Society</td>
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<td>Language, Literature, and Society-General</td>
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<td>Seminar-German Language, Literature, and Society</td>
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<td>Seminar-Spanish Language, Literature, and Society</td>
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<td>Music History I</td>
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<td>Music History II</td>
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<td>U.S. Political Parties and Elections</td>
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<td>Race and Ethnicity in U.S. Politics</td>
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<td>History of Political Thought</td>
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<td>American Political Theories</td>
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<td>Comparative Racial/Ethnic Politics</td>
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<td>Evaluating Contemporary Television</td>
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PSCM 342  Critical Media Studies  4B  3
PSCM 350  Evaluating Contemporary Film  4B  3
PSCM 411  Contemporary Speeches on  4B  3
          American Issues
PSCM 412  Evaluating Contemporary Rhetoric  4B  3

Choose courses not taken elsewhere from the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY, SOC, SPCM, TH.

Select a total of 18 upper-division (300- to 400-level) credits not taken elsewhere from at least two of the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY (only 6 credits may come from PSY), SOC, SPCM, TH.

Select either LB 455/SPCM 455, or LB 456/JTC 456, or a course from the list (above) of AUCC 4B approved courses. Some courses may have prerequisites that will require extra coursework for Interdisciplinary Liberal Arts majors.

Students must take AUCC categories 4A, 4B, and 4C courses in their primary major.

Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**Second Field Requirement**

Students in the Interdisciplinary Liberal Arts major must complete one of the following choices:

- A minor
- An interdisciplinary minor
- A second major
- 21 credits in a single language to include at least 6 upper-division (300- to 400-level) credits. At least 6 upper-division credits in this choice must be completed at CSU. (Completion of this choice is not transcripted.)

**Freshman**

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<td>College Composition</td>
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<td>(GT-CO2)</td>
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**Semester 2**

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<td>Historical Perspectives</td>
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**Sophomore**

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**Semester 4**

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734  Major in Interdisciplinary Liberal Arts
Global and Cultural Awareness  
Second Field Course(s)  
Electives  

| Total Credits | 15 |

**Junior**

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**Senior**

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<td>LB 455/SPCM 455</td>
<td>Media in Society (GT-SS3)</td>
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<tr>
<td>LB 456/JTC 456</td>
<td>Documentary Film as a Liberal Art</td>
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**Program Total Credits:** 120

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### Media Studies Minor

**Requirements**

**Journalism and Media Communication**  
Clark Building, Room C244  
(970) 491-6310

**Communication Studies**  
Behavioral Sciences Building, Room A203  
(970) 491-6140

The Media Studies minor provides a foundation for understanding the impacts and roles of mass media in society. Courses focus on media and film history, criticism, law, ethics, social effects, cultural consequences, as well as multicultural and international media issues.

The minor is offered jointly by the Department of Journalism and Media Communication and the Department of Communication Studies.

**Effective Spring 2014**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<td>JTC 100</td>
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<td>or SPCM 100</td>
<td>Communication and Popular Culture (GT-AH1)</td>
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### Code

### Title

### Credits

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Communications Law or Freedom of Speech

Select 15 credits from the following:

- JTC 311 History of Media
- JTC 316 Multiculturalism and the Media
- JTC 350 Public Relations
- JTC 355 Advertising
- JTC 411 Media Ethics and Issues
- JTC 412 International Mass Communication
- JTC 413 New Communication Technologies and Society
- JTC 414 Media Effects
- JTC 456/LB 456 Documentary Film as a Liberal Art
- SPCM 341 Evaluating Contemporary Television
- SPCM 342 Critical Media Studies
- SPCM 346 Virtual Culture and Communication
- SPCM 350 Evaluating Contemporary Film
- SPCM 354 History and Appreciation of Film
- SPCM 356 Asians in the U.S. Media
- SPCM 357 Film and Social Change
- SPCM 358 Gender and Genre in Film
- SPCM 454/ETST 454 Chicano/a Film and Video
- SPCM 455/LB 455 Narrative Fiction Film as a Liberal Art

Total Credits 21

Department of Anthropology

Office in Clark Building, Room B219
(970) 491-5447
anthropology.colostate.edu (http://anthropology.colostate.edu)

Professor Michelle Glantz, Chair

Undergraduate Majors

- Major in Anthropology
- Archaeology Concentration
- Biological Anthropology Concentration
- Cultural Anthropology Concentration
- Geography Concentration

Minors

- Minor in Anthropology
- Minor in Geography

Graduate Programs in Anthropology

The department offers graduate programs leading to a Master of Arts degree (Plan A thesis option or Plan B portfolio option). It also has a Master of Arts specialization in each of four programmatic areas: Health and Well-Being, Humans and the Environment, International Development and Globalization, and Professional Methods and Techniques. Students may develop a research project or professional program in these programmatic areas, or in any area related to our faculty’s research interests.

Health and Well-Being—Studies the ways that human health and wellness are influenced by past and present sociocultural, environmental, biological, and biocultural forces, by drawing from broad and holistic perspectives on human well-being.

Humans and the Environment—Investigates how past and present human activities influence the environment; the ways ecological and other processes affect human evolution and the human condition today; and the resilience of social and ecological systems.

International Development and Globalization—Examines how local societies respond to global influences; the extent to which cultural meanings, beliefs, institutions, structures of inequality, and social relations between genders and among kin are changing as a result; and how processes of economic and community development can improve basic aspects of human welfare.

Professional Methods and Techniques—Develops skills in a wide range of methods and techniques used by professionals in applied anthropology, federal and state natural resource agencies, and other arenas of social, historical, biological and spatial research about humans. These include qualitative research and interview protocols, quantitative analysis, GIS and remote sensing, archaeological field survey, historic archaeological methods, culture and heritage resource management, and paleoanthropological methods.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the department’s website (http://anthropology.colostate.edu).

Master Programs

- Master of Arts in Anthropology
- Master of Arts in Anthropology, Plan A, The Anthropology of Health and Well-Being Specialization
- Master of Arts in Anthropology, Plan B, The Anthropology of Health and Well-Being Specialization
- Master of Arts in Anthropology, Plan A, Humans and the Environment Specialization
Courses
Subjects in this department include: Anthropology (ANTH) and Geography (GR).

Anthropology (ANTH)

ANTH 100 Introductory Cultural Anthropology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Human societies and their cultural setting; variation in beliefs, social customs, and technologies; human differences in anthropological terms.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ANTH 120 Human Origins and Variation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Mechanisms of evolution; genetics. Living primate biology, behavior, and history. Human evolutionary history. Human variation and adaptation.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

ANTH 121 Human Origins and Variation Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Labs demonstrating genetic and evolutionary processes, comparative skeletal anatomy, human evolution through fossil casts, and modern human variation.
Prerequisite: ANTH 120, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

ANTH 140 Introduction to Prehistory (GT-HI1) Credits: 3 (3-0-0)
Course Description: Origins of human society from the Stone Age to urban civilization using architecture, art, tools, and other material remains.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ANTH 200 Cultures and the Global System (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analyze diversity, cultural responses, and adaptations of smaller-scale societies to emerging global trends.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ANTH 235 Indigenous Peoples of North America Credits: 3 (3-0-0)
Course Description: Explores Native groups of North America from an anthropological perspective, and utilizes a culture area framework as a basis for investigation. Culture area framework is largely based on historical material—how these people have lived in the recent past. Evaluating how these groups live in the present. Contemporary issues, globalization, and local responses to local concerns.
Prerequisite: None.
Registration Information: Sections may be offered: Online. Credit not allowed for both ANTH 235 and ANTH 280A2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 250 Introduction to Field Archaeology Credits: 2 (1-2-0)
Course Description: Field methods including map preparation and interpretation, site location and recording, site excavation, and stratigraphy.
Prerequisite: ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 275 Introduction to Forensic Anthropology Credits: 3 (3-0-0)
Also Offered As: SOC 275.
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 275 and SOC 275. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ANTH 310  Peoples and Cultures of Africa  Credits: 3 (3-0-0)
Course Description: Sub-Saharan lifestyles including marriage and family, traditional government, religion and magic, ecology and economy, art, music, and literature.
Prerequisite: ANTH 100.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 312  Modern Indian Culture and Society  Credits: 3 (3-0-0)
Course Description: Anthropological contributions to the understanding of contemporary India.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 313  Modernization and Development  Credits: 3 (3-0-0)
Course Description: Processes by which cultures change and modernize, 1989 to the present.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 314  Southeast Asian Cultures and Societies  Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial cultures, globalization processes, and changing ethnic and gender identities in Southeast Asian societies.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 319  Latin American Peasantry  Credits: 3 (3-0-0)
Course Description: Sociocultural, economic, and political responses of Latin American peasants to poverty and global processes.
Prerequisite: ANTH 100 or ANTH 200 or ETST 100.
Registration Information: Credit not allowed for both ANTH 319 and ETST 319.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 320  Human Ecology  Credits: 3 (3-0-0)
Course Description: Roles of technology, economics, social organization, and ideology in human adaptations to and survival in natural and cultural environments.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 120 or BZ 101 or LAND 220 or LIFE 220).
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 330  Applied Medical Anthropology  Credits: 3 (3-0-0)
Course Description: Major anthropological theories and descriptions of religious beliefs and practices. Religion in a cross-cultural and evolutionary perspective.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 334  Narrative Traditions and Social Experience  Credits: 4 (3-2-0)
Course Description: Relationship between narrative traditions and social contexts of their creation.
Prerequisite: ANTH 100 or ANTH 200 or E 140 or SOC 100.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 335  Language and Culture  Credits: 3 (3-0-0)
Course Description: Human language and primate communication, nonverbal channels, sociolinguistics, and language change.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 336  Art and Culture  Credits: 3 (3-0-0)
Course Description: Art expression is a defining factor in cultural identity and representation in a modern world where geographical and political borders are diminishing.
Prerequisite: ANTH 100 or ANTH 200.
Restriction: .
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 338  Gender and Anthropology  Credits: 3 (3-0-0)
Course Description: Theory, themes, and debates in anthropological gender studies, ethnographic survey of women and men cross-culturally.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 340  Medical Anthropology  Credits: 3 (3-0-0)
Course Description: Cultural adaptation to disease; non-Western theories of health and disease; categories, causes, cures; learned roles of patients and healers.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ANTH 350 Archaeology of North America  Credits: 3 (3-0-0)
Course Description: Native American life, tools, architecture, religion, food-getting from cultures of 12,000 years ago or earlier until European contact.
Prerequisite: ANTH 140.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 351 Archaeology of Europe and Africa  Credits: 3 (3-0-0)
Course Description: Human culture, tools, art, religion, social life, subsistence, and paleoecology from 4 million B.C. to 1200 B.C. in the Old World.
Prerequisite: ANTH 140.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 352 Geoarchaeology  Credits: 3 (3-0-0)
Course Description: Analytical techniques, concepts, and field methodologies from the earth sciences to better understand the archaeological record.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 359 Colorado Prehistory  Credits: 3 (2-0-1)
Course Description: Human behavioral responses to environmental diversity, cultural adaptation, Pleistocene and recent climates, anthropogenic environmental change.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 360 Archaeological Investigation  Credits: 3 (2-2-0)
Course Description: Investigation of the archaeological record, how the record was formed, and how archaeological data are analyzed and interpreted.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 365 Quantifying Anthropology  Credits: 3 (3-0-0)
Course Description: Managing, quantifying and illustrating anthropological data-sets with appropriate software.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 370 Primate Behavior and Ecology  Credits: 3 (3-0-0)
Course Description: Behavioral patterns, ecological relationships, and communication of nonhuman primates.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 372 Human Osteology  Credits: 3 (2-2-0)
Course Description: Human bones and teeth in a review of functional human evolution.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 373 Human Evolution  Credits: 3 (3-0-0)
Course Description: Current topics and debates in human evolution concentrating on biocultural changes in the human lineage.
Prerequisite: ANTH 120 or BZ 110.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 374 Human Biological Variation  Credits: 3 (2-0-1)
Course Description: Biological diversity of human populations; history of development of race concept.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation.
Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 375 Evolution of Primate Behavior  Credits: 3 (3-0-0)
Course Description: Primate behavior from an evolutionary perspective, drawing on a variety of studies of humans, primates, and mammals.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 376 Evolution of Human Adaptation  Credits: 3 (2-0-1)
Course Description: Unique characteristics of humans: bipedalism, encephalization, dentition, birth process, an attenuated period of development.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 378 Bipedal Apes  Credits: 3 (3-0-0)
Course Description: Human bipedal walking within a comparative framework of primate locomotion and anatomy. Specific focus is on kinematics and kinetics of soft- and hard-tissues including analysis of extant primate locomotion, morphology, and development. Discussions focus on debates in primate functional anatomy and locomotion including hypotheses surrounding the origins and evolution bipedal walking and running and possible maladaptations of being a human biped.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 400 History of Anthropological Thought  Credits: 3 (3-0-0)
Course Description: Anthropological theory from its beginnings in 19th century through recent developments into the 20th century.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 140 and ANTH 120 and ANTH 121).
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 411 Indians of South America  Credits: 3 (0-0-3)
Course Description: Ethnographic and cultural characteristics of South American indigenous groups and the current critical issues they face.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 412 Indians of North America  Credits: 3 (3-0-0)
Course Description: Native American peoples, their cultural variation across the continent, and cultural encounters with colonial expansion.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 413 Indigenous Peoples Today  Credits: 3 (3-0-0)
Course Description: Contemporary cultural and social issues of indigenous peoples around the globe, including North and South American Indians and Australian Aborigines.
Prerequisite: ANTH 200 or ANTH 412 or ANTH 414 or ETST 414.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 414 Development in Indian Country  Credits: 3 (3-0-0)
Also Offered As: ETST 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian Country.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 414 and ETST 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 415 Indigenous Ecologies and the Modern World  Credits: 3 (3-0-0)
Course Description: Impact of the modern world in indigenous peoples’ relationship to their environments and natural resources.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 416 Gender, Culture, and Health  Credits: 3 (3-0-0)
Course Description: Examine the role of anthropology in current global health issues paying particular attention to culture and gender.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 422 Comparative Legal Systems  Credits: 3 (3-0-0)
Also Offered As: SOC 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both ANTH 422 and SOC 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 423 Cultural Psychiatry  Credits: 3 (3-0-0)
Course Description: Social determinants of mental health. Cross-cultural health and healing. Cultural contexts of U.S./Western and Indigenous/non-Western psychiatry.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 438 Approaches to Community-Based Development  Credits: 3 (0-0-3)
Course Description: Explores the structure and practice of community development globally, engaging in critical analysis of different approaches and their impact.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 439 Community Mobilization  Credits: 3 (0-0-3)
Course Description: Structural, social, and psychological barriers that inhibit cooperation and collective action.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 440 Theory in Cultural Anthropology  Credits: 3 (3-0-0)
Course Description: Theoretical paradigms used to explain culture including evolutionary, functional, ecological, political economy, postmodernism, and hegemony.
Prerequisite: ANTH 100 or ANTH 200.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ANTH 441  Method in Cultural Anthropology  Credits: 3 (3-0-0)
Course Description: Methodological orientations and research techniques. Ethnographic and cross-cultural approaches including quantitative and formal models.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 442  Ethnographic Field School  Credits: Var[3-8] (0-0-0)
Course Description: Directed fieldwork with American Indian communities; methodology, protocols, and social relations of ethnographic field research.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 100 to 99999 - at least 9 credits.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 443  Ethnographic Field Methods  Credits: 3 (0-6-0)
Course Description: Directed experiential preparation for applied ethnographic field methods and research questions.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 444  Cultures of Virtual Worlds—Research Methods  Credits: 4 (3-2-0)
Course Description: Methodologies and directed research related to virtual worlds and internet and gaming communities.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Must register for lecture and laboratory. Junior standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 445  Psychological Anthropology  Credits: 3 (3-0-0)
Course Description: Cross-cultural exploration of the human mind by studying the ideas, desires, and practices of individuals in various sociocultural settings.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 446  New Orleans and the Caribbean  Credits: 3 (3-0-0)
Course Description: New Orleans and the Caribbean connections through colonization, slavery, modernity, legacies of race, gender and class, the expressive arts.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 447  Gender Equity in Development  Credits: 3 (0-0-3)
Course Description: Various forms of women’s power, and potentials for disempowerment within the context of international development.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 448  Development and Empowerment  Credits: 3 (0-0-3)
Course Description: Development as an economic process of wealth accumulation, as well as a socio-political process of empowerment.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 449  Participatory Monitoring and Evaluation  Credits: 3 (3-0-0)
Course Description: Participatory methods in the monitoring and evaluation of development projects, where multiple stakeholders are involved in the process.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 450  Hunter-Gatherer Ecology  Credits: 3 (0-0-3)
Course Description: Development of anthropological method and theory; study of contemporary and prehistoric foraging peoples.
Prerequisite: ANTH 100 and ANTH 120 and ANTH 121 and ANTH 140.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 451  Andean Archaeology and Ethnohistory  Credits: 3 (3-0-0)
Course Description: Prehistory and colonial experiences of native Andean peoples.
Prerequisite: ANTH 100 or ANTH 140.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 452  Archaeology of Mesoamerica  Credits: 3 (3-0-0)
Course Description: Ancient cultures and civilizations in Middle America.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 453  Impacts on Ancient Environments  Credits: 3 (3-0-0)
Course Description: Major issues and case studies in the archaeology of ancient human societies and their environmental impacts.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 454  Anthropological Perspectives on Food  Credits: 3 (3-0-0)
Course Description: A long term perspective on the political economy of human food ways from ancient hunter-gatherers to the present. Topics will include foraging practices, domestication, feasting and emergent social complexity, the role of food in ancient states, and globalization, as well as the modern food economy. Lectures and readings will be based on research in archaeology, cultural anthropology, and biological anthropology.
Prerequisite: ANTH 100 and ANTH 120 or ANTH 100 and ANTH 140 or ANTH 100 and ANTH 200 or ANTH 120 and ANTH 140 or ANTH 120 and ANTH 200 or ANTH 140 and ANTH 200.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 455  Great Plains Archaeology  Credits: 3 (3-0-0)
Course Description: Prehistoric people on Great Plains from earliest hunter-gatherers to historic contact; cultural responses to changing conditions.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 456  Archaeology and the Public  Credits: 3 (3-0-0)
Course Description: Applied archaeology in public settings, including publication, museum display, education, the illicit artifact trade, and other ethical issues.
Prerequisite: (ANTH 140) and (ANTH 252 or ANTH 350 or ANTH 351 or ANTH 352 or ANTH 451 or ANTH 452 or ANTH 453 or ANTH 455 or ANTH 460 or ANTH 465).
Registration Information: 3 additional credits of archaeology required. Required field trips.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 457  Lithic Technology  Credits: 3 (2-2-0)
Course Description: Method and theory behind production, use, and discard of stone tools by prehistoric peoples. Hands-on application in laboratory setting.
Prerequisite: ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 460  Field Class in Archaeology  Credits: Var[3-8] (0-0-3)
Course Description: Directed fieldwork in local archaeology, site survey, and excavation; recovery, preservation, cataloging, analysis of artifactual and skeletal materials.
Prerequisite: None.
Registration Information: Written consent of instructor. Required field trips.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 461  Anthropological Report Preparation  Credits: 3 (0-0-3)
Course Description: Producing written and oral presentations for anthropological research, employment, or graduate work. Grant writing and manuscript preparation.
Prerequisite: ANTH 460.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 465  Zooarchaeology  Credits: 3 (2-2-0)
Course Description: Analysis of animal bones from archaeological sites to develop interpretations of past human behavior.
Prerequisite: ANTH 120 and ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 469  Archaeology Seminar in Mesopotamian Prehistory  Credits: 3 (0-0-3)
Course Description: Origins of human society from the stone age to urban civilizations using architecture, art, tools, and other material remains.
Prerequisite: ANTH 100 to 99999 - at least 6 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 470  Paleontology Field School  Credits: 4 (2-4-0)
Course Description: Field methods in fossil excavation, preservation, and curation; the evolution of the primate order.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 472  Human Biology  Credits: 3 (3-0-0)
Course Description: Human biological responses to environmental conditions and constraints including diet, nutrition, disease, climate, culture change, and urbanization.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 473  The Neandertals  Credits: 3 (2-0-1)
Course Description: Socio-historical foundations of questions regarding Neandertal paleobiology and culture and the Neandertal role in the evolution of Homo sapiens.
Prerequisite: (ANTH 120 or BZ 110) and (ANTH 372 or ANTH 373 or ANTH 374 or ANTH 375 or ANTH 376).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 475  Methods of Analysis in Paleoanthropology  Credits: 3 (3-0-0)
Course Description: Practical discussion of techniques used to reconstruct dietary and locomotor behavior and evolutionary relationships in human fossil remains.
Prerequisite: ANTH 373.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 478  Heritage Resource Management  Credits: 3 (3-0-0)
Also Offered As: HIST 478.
Course Description: Cultural resource laws and policy; practices commonly employed in management and preservation of these diverse resources.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Credit not allowed for both ANTH 478 and HIST 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 479  International Development Theory and Practice  Credits: 3 (3-0-0)
Also Offered As: IE 479.
Course Description: Contemporary issues in international community and economic development, with practical and theoretical analysis from interdisciplinary perspectives.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 479 and IE 479.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 484 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANTH 486 Practicum  Credits: Var[1-6] (0-0-0)
Course Description: Application of anthropological methods under actual project conditions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 487 Internship  Credits: Var[1-9] (0-0-0)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of anthropological principles.
Prerequisite: ANTH 100 to 499 - at least 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 492A Seminar: Archaeology  Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 6 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 492B Seminar: Biological Anthropology  Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 493 Capstone Seminar  Credit: 1 (0-0-1)
Course Description: Linkages between anthropological subfields and how professional anthropologists approach issues.
Prerequisite: None.
Registration Information: Concurrent registration in a 4A course (see department list). Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 495 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 496 Group Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 500 Development of Anthropological Theory  Credits: 3 (3-0-0)
Course Description: Contemporary development of anthropological thought.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Undergraduates must have written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 515 Culture and Environment  Credits: 3 (3-0-0)
Course Description: Theoretical accounts of societies’ variable relationships to their environments, indigenous peoples’ interactions with nature in context of modernity.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 520 Women, Health, and Culture  Credits: 3 (3-0-0)
Course Description: Women’s experiences and interpretations of their health; cultural, political, and economic forces affecting women’s health.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 521 Gender, Sexuality, and Culture  Credits: 3 (3-0-0)
Course Description: Gender and sexuality cross-culturally; theory, cultural constructions, colonialism, class, race, ethnicity, health, violence.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 528 Economic Anthropology  Credits: 3 (0-0-3)
Course Description: Theoretical approaches to the cultural context of
economic activity.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 529 Anthropology and Sustainable Development  Credits: 3 (0-0-3)
Course Description: Global development goals, poverty and hunger,
environmental sustainability, education, and equity.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 530 Human-Environment Interactions  Credits: 3 (3-0-0)
Course Description: Paradigms and concepts in ecological anthropology
with an emphasis on adaptation and resilience.
Prerequisite: ANTH 000 to 99999 - at least 9 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 532 The Culture of Disaster  Credits: 3 (0-0-3)
Course Description: Study of how the human impacts of disaster and the
process of recovery are shaped by cultural as well as structural realities.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 535 Globalization and Culture Change  Credits: 3 (0-0-3)
Course Description: Evolving paradigms and patterns of globalization and
international development; cultural responses – resistance, dependency,
fragmented identities.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 539 Anthropology of Modernity  Credits: 3 (3-0-0)
Course Description: Critical examination of the institutions, values, and
processes which constitute the modern world. Impact of modern forces
on "traditional" peoples.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 540 Medical Anthropology  Credits: 3 (0-0-3)
Course Description: Cultural and biocultural approaches to health, illness,
and the body; theory and application in medical anthropology.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 541 Seminar in Archaeological Method  Credits: 3 (1-0-2)
Course Description: Methods of archaeological recovery and
interpretation, and process of archaeological analysis and reporting.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 542 Seminar in Archaeological Theory  Credits: 3 (1-0-2)
Course Description: Theories of recovery, reconstruction, and
interpretation of the archaeological record.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 544 From Death to Discovery  Credits: 3 (1-0-2)
Course Description: Theoretical perspectives on the decay and
fossilization of organisms between their death and discovery.
Prerequisite: ANTH 000 to 99999 - at least 9 credits.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 545 Global Mental Health--Theory and Method  Credits: 4 (3-2-0)
Course Description: Cross-cultural study of mental health and healing;
cultural, clinical, and biological perspectives; integration of theory and
method.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Graduate standing. Undergraduates must have written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 546 Culture, Mind, and Cognitive Science  Credits: 3 (3-0-0)
Course Description: Anthropological contributions to cognitive science.
Culture, mind, and social context. Theory building and practical
applications.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 547 Mind, Medicine, and Culture  Credits: 4 (3-2-0)
Course Description: Cultural-psychological influences on health and
healing; mind-body medicine; complementary and alternative medicine;
indigenous and spiritual healing.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550A Regional Prehistory: Great Plains  Credits: 3 (0-0-3)
Course Description: None.
Prerequisite: ANTH 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 550B Regional Prehistory: Great Basin Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH 350.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550C Regional Prehistory: Southwestern Credits: 3 (0-0-3)
Course Description:
Prerequisite: ANTH - at least 9 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 551 Historical Archaeology Credits: 3 (3-0-0)
Course Description: Theory, methods, and issues in historical archaeology.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 553 Archaeology of Complex Societies Credits: 3 (0-0-3)
Course Description: Issues in development and organization of complex societies with emphasis on the Americas.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 554 Ecological and Social Agent-based Modeling Credits: 3 (2-2-0)
Also Offered As: NR 554.
Course Description: Exploring the use and making of agent-based models featuring interacting individuals in ecological and social simulation, with examples and projects.
Prerequisite: None.
Restriction: Must not be a: Freshman, Freshman, Sophomore, Sophomore.
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 554 and NR 554.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 555 Paleoindian Archaeology Credits: 3 (0-0-3)
Course Description: Archaeology of the Americas during late Pleistocene/early Holocene; background and development of contemporary models.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 556 Field Methods Training in Online Environments Credits: 3 (2-2-0)
Course Description: Collaborative analysis of ethnographic field data collected in online virtual worlds; mixed methods applicable to other built and natural places.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 557 Anthropology and Global Health Credits: 3 (3-0-0)
Course Description: Global health concerns and problems including poverty, urbanization, malnutrition, diet, war and refugees, climate, and environment.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 558 Human Origins Credits: 3 (0-0-3)
Course Description: Major trends in human evolution through use of detailed case studies and regionally focused primary research.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 566 Field Methods Training in Online Environments Credits: 3 (2-2-0)
Course Description: Collaborative analysis of ethnographic field data collected in online virtual worlds; mixed methods applicable to other built and natural places.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 570 Contemporary Issues-Biological Anthropology Credits: 3 (0-0-3)
Course Description: Theory and applications in biological anthropology focusing on syntheses and interpretations of human biology, variation, adaptability, and evolution.
Prerequisite: None.
Registration Information: Six credits in biological anthropology.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 571 Animal Behavior Credits: 3 (0-0-3)
Course Description: Animal behavior and evolutionary ecology.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 572 Human Origins Credits: 3 (0-0-3)
Course Description: Major trends in human evolution through use of detailed case studies and regionally focused primary research.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 573 Paleoclimatic Anthropology Credits: 3 (0-0-3)
Course Description: Paleoanthropology and paleoclimate models and their use in understanding human evolution.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 574 Ecological and Social Agent-based Modeling Credits: 3 (0-0-3)
Course Description: Exploring the use and making of agent-based models featuring interacting individuals in ecological and social simulation, with examples and projects.
Prerequisite: None.
Restriction: Must not be a: Freshman, Freshman, Sophomore, Sophomore.
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 554 and NR 554.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 575 Paleoindian Archaeology Credits: 3 (0-0-3)
Course Description: Archaeology of the Americas during late Pleistocene/early Holocene; background and development of contemporary models.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 576 Pleistocene and Human Evolution Credits: 3 (0-0-3)
Course Description: Methods used to reconstruct past environments and understand the effects of past climate on the major trends of human evolution.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 577 Advanced Ethnographic Field Methods Credits: 4 (3-2-0)
Course Description: Mixed qualitative and quantitative field methods to address practical real-world problems. Applied, public, collaborative, participatory, and community-based ethnographic research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 660  Field Archaeology  Credits: Var[2-10] (0-0-0)
Course Description: Field applications of nondestructive survey methods, advanced cartographic and excavation methods, project supervision skills.
Prerequisite: ANTH 460.
Restriction: Must be a: Graduate, Professional.
Registration Information: Two seasons of field experience may substitute for ANTH 460. Required field trips.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 679  Applications of International Development  Credits: 3 (3-0-0)
Also Offered As: IE 679.
Course Description: In-depth interdisciplinary analysis of theoretical and practical issues in implementing economic and community-based international development programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Credit not allowed for both ANTH 679 and IE 679.
Terms Offered: Fall, Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 686  Practicum-Field Archaeology  Credits: Var[1-18] (0-0-0)
Course Description: Direction of anthropological fieldwork under professional supervision.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 692  Seminar  Credits: 3 (0-0-3)
Course Description: Current trends of research in archaeology; cultural and physical anthropology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 696  Group Study-Anthropological Theory  Credits: Var[1-3] (0-0-0)
Course Description: Intensive analysis of selected topics and theories in anthropology, both historical and contemporary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Geography (GR)

GR 100  Introduction to Geography (GT-SS2)  Credits: 3 (3-0-0)
Course Description: Major geographic themes applied to selected regions; physical environment, human-land relationships, regional analysis.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 210  Physical Geography  Credits: 3 (3-0-0)
Also Offered As: ESS 210.
Course Description: Energy, mass budget, and human impacts on atmosphere, hydrosphere, and continental land surfaces.
Prerequisite: None.
Registration Information: Credit not allowed for both GR 210 and ESS 210.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 303  Mountain Geography  Credits: 3 (3-0-0)
Course Description: The physical and human dimensions of mountains. Examples from mountains around the world with case studies from Colorado.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 304  Sustainable Watersheds  Credits: 3 (3-0-0)
Also Offered As: WR 304.
Course Description: Effects of climate, land use, and water use on the sustainability of water quantity and quality.
Prerequisite: None.
Registration Information: Completion of the AUCC 1B mathematics requirement. Credit not allowed for both GR 304 and WR 304.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Biological & Physical Sciences 3A.
GR 311 GIS for Social Scientists Credits: 3 (1-4-0)
Course Description: Applications of GIS techniques useful to the social sciences. Mapping techniques and GIS toolkits are practiced in lab.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 315 Quantitative Geographical Methods Credits: 3 (3-0-0)
Course Description: Methods to collect, analyze, display, and model geographic data.
Prerequisite: GR 100.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 320 Cultural Geography Credits: 3 (3-0-0)
Course Description: Geographic analysis of cultural phenomena, elements emphasizing human-land relationships and spatial patterns of agriculture, cities, language, religion.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

GR 323 Remote Sensing and Image Interpretation Credits: 3 (2-2-0)
Also Offered As: NR 323.
Course Description: Remote sensing systems and applications; characteristics of photographic, scanner and radar images; imagery interpretations.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 323, GR 503, NR 323, NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 330 Urban Geography Credits: 3 (3-0-0)
Course Description: Spatial distribution of urban areas and the geographic similarities and contrasts that exist between and within them.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 331 Geography of Farming Systems Credits: 3 (3-0-0)
Course Description: Geographic analysis of farming systems worldwide and by region; their development over time, human-land relationships, and spatial patterns.
Prerequisite: GR 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 345 Geography of Hazards Credits: 3 (3-0-0)
Course Description: Causes, effects, distributional patterns, and human adjustments to environmental hazards.
Prerequisite: GR 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 348 Biogeography Credits: 3 (3-0-0)
Course Description: Species distribution of plants and animals in relation to earth history and environments, evolution, and ecology.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 410 Climate Change: Science, Policy, Implications Credits: 3 (3-0-0)
Course Description: Implications and consequences for earth systems including the cryosphere, hydrosphere, and biosphere.
Prerequisite: GR 000 to 9999 - at least 3 credits.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 411 The Geography of Commodities Credits: 3 (3-0-0)
Course Description: Social relations, international trade, and environmental impacts surrounding the production, transportation, exchange and consumption of commodities.
Prerequisite: GR 100.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 415 The Geography of Commodities Credits: 3 (3-0-0)
Course Description: Social relations, international trade, and environmental impacts surrounding the production, transportation, exchange and consumption of commodities.
Prerequisite: GR 100.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 420 Spatial Analysis with GIS Credits: 4 (3-2-0)
Course Description: Theory, application of geographic information systems for spatial analysis; conceptual basis of GIS, nature and use of geographic data, case studies.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 430 Land Change Science and Remote Sensing Credits: 3 (3-0-0)
Course Description: Local case studies and global cases of land-use/land-cover changes in rural, peri-urban, and urban areas.
Prerequisite: GR 100.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 431 Land Change Science Lab Credits: 1 (0-3-0)
Course Description: Utilize advanced remote sensing techniques and satellite images, air photos, and ancillary data to investigate land-use and land-cover changes.
Prerequisite: GR 323 or NR 323 or GR 503 or NR 503.
Registration Information: Must have concurrent registration in GR 430.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 448 Forest Biogeography and Climate Change Credits: 3 (3-0-0)
Course Description: Forest adaptation and conservation in relation to global change with a focus on climate change.
Prerequisite: ESS 211 or ESS 311 or F 311 or GR 100 or GR 210 or ESS 210 or GR 303 or GR 348 or GR 410.
Registration Information: Junior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Major in Anthropology

The mission of the Anthropology Department is to

1. offer and maintain instructional programs that provide a comprehensive overview and analyses of people and their cultures, both past and present;
2. conduct research in order to advance and expand knowledge of the fields of anthropology and geography;
3. participate actively in programs of interdisciplinary research.

The Department of Anthropology houses a faculty of cultural anthropologists, archaeologists, biological anthropologists, and geographers whose scholarship spans the breadth of the human experience. The program prepares undergraduate students to describe, analyze, and interpret the human condition. An examination of the social, environmental, and evolutionary contexts in which the human species is embedded defines most course work in the discipline. The program is integrative, drawing from geography, biology, the humanities, and other social and natural sciences. Geography figures prominently in our program and provides an important spatial lens through which human groups are examined over time. Four programmatic areas define faculty research and scholarship with which students can engage: humans and the environment, international development and globalization, health and well-being, and professional methods and techniques. In the education of undergraduates, the department values and promotes experiential training, primary research, and public engagement and education.

The research endeavors of the anthropology faculty are trans-disciplinary and international, they are interested in diverse topics including but not limited to contemporary culture, ethnicity, linguistics, comparative religion, virtual worlds, subsistence patterns, archaeology, human ecology, human anatomy, evolution, biogeography, land cover/land use patterns, glaciology, and the behavior of non-human primates.

Anthropology majors follow a liberal arts curriculum that provides a broad education with an emphasis on learning how to learn. The department has ten research and teaching laboratories and three summer field schools; the Ethnographic Field School at the Pine Ridge Indian Reservation, the Archaeology Field School, and the Paleontology Field School.

Undergraduate students can pursue a general anthropology degree, learning about the diversity of the human existence from a broad and holistic perspective. Students can also declare a concentration within the program. Declaring a concentration allows for a focused course of study, specializing in the particular subfield of interest. Within each concentration (Archaeology, Biological Anthropology, Cultural Anthropology and Geography), specific categories of classes guide students in learning the major theories, methods, and applications related to modern practice of our discipline. Along with our offerings of world class field schools, archaeological, biological, and ethnographic methods and geographical techniques are encouraged in order to further gain experience and perspective. Upon graduation, students are prepared for jobs or advanced training in graduate school. Students come away with a respect and appreciation for the diversity of human existence.

Learning Outcomes

Students will:

- Demonstrate knowledge related to a basic appreciation of anthropology and its potential including:
  a. respect for the similarities and differences that characterize human cultures over time and across space;
  b. the theoretical perspectives that anthropologists use to comprehend these similarities and differences;
  c. the methods and tools used to describe and analyze them; and
  d. how the relationship between theory, methods, and data intersects.

- Integrate anthropological concepts across subfields or with other social sciences and humanities disciplines, and articulate their anthropological understandings through papers written and presented during their senior year.

- Use what they have learned in their anthropology courses in future activities after graduation.

Potential Occupations

Anthropology, like many majors in the liberal arts, provides students with a broad academic background suitable for a variety of jobs in the public and private sectors. Anthropology majors are trained to think independently and critically, communicate effectively, and function
in a multicultural world. Employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Participating in internships and cooperative education opportunities is highly recommended to enhance students’ practical training and development. Careers for graduates are available in international development, health care, education, business, natural resource management, and government. Graduates who go on for advanced studies can pursue careers in anthropology or attain advanced positions with the possibility of rising to top professional levels.

Some career opportunities for anthropology graduates include, but are not limited to: museum curator/researcher, genealogist, international relief representative, salvage archaeologist, collections assistant, resource specialist, classical or historical anthropologist, cultural affairs officer, diplomatic service representative, immigration or foreign service officer, linguist, educational television researcher, forensic osteologist, biographical writer, scientific/technical writer, reporter, ethnographic photographer, anthropological linguist, rural development worker, ethnic groups’ special concerns advocate, intercultural educator, medical anthropologist, grant writer, psychological anthropologist, international development administrator, public relations representative, public opinion pollster, sales/marketing representative, consultant for cross-cultural relations, personnel worker, geographic information systems specialist.

### Concentrations
- Archaeology Concentration
- Biological Anthropology Concentration
- Cultural Anthropology Concentration
- Geography Concentration

### Requirements
**Effective Spring 2015**

#### Freshman

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<th>Course Code</th>
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<td>ANTH 100¹</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
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<td>ANTH 200²</td>
<td>Cultures and the Global System (GT-SS3)</td>
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<td>ANTH 120</td>
<td>Human Origins and Variation (GT-SC2)</td>
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<td>ANTH 121</td>
<td>Human Origins and Variation Laboratory (GT-SC1)</td>
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<td>ANTH 140</td>
<td>Introduction to Prehistory (GT-HI1)</td>
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<td>CO 150</td>
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<td>Introduction to Geography (GT-SS2)</td>
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<td>Additional Natural Sciences⁴</td>
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<td>Additional Social Sciences⁵</td>
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<td>Arts and Humanities</td>
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<td>Biological and Physical Sciences</td>
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<td>Select one from the following:</td>
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<td>Global and Cultural Awareness²</td>
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<td>3E</td>
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<tr>
<td>Social and Behavioral Science¹</td>
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<td>Anthropology Elective⁶</td>
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#### Junior

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<td>ANTH 400</td>
<td>History of Anthropological Thought</td>
<td>4B</td>
<td>3</td>
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<td>Select one of the following archaeology courses not taken in another category:</td>
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<td>3-8</td>
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<td>ANTH 350</td>
<td>Archaeology of North America</td>
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<tr>
<td>ANTH 351</td>
<td>Archaeology of Europe and Africa</td>
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<td>ANTH 352</td>
<td>Geoarchaeology</td>
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<td>ANTH 359</td>
<td>Colorado Prehistory</td>
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<td>ANTH 360</td>
<td>Archaeological Investigation</td>
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<td>ANTH 450</td>
<td>Hunter-Gatherer Ecology</td>
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<tr>
<td>ANTH 451</td>
<td>Andean Archaeology and Ethnohistory</td>
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</tbody>
</table>

¹ Additional plan: 15 credits
² Additional plan: 15 credits
³ Additional plan: 6 credits
⁴ Additional plan: 10 credits
⁵ Additional plan: 6 credits
⁶ Additional plan: 12 credits
⁷ Additional plan: 4 credits
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 452</td>
<td>Archaeology of Mesoamerica</td>
</tr>
<tr>
<td>ANTH 453</td>
<td>Impacts on Ancient Environments</td>
</tr>
<tr>
<td>ANTH 455</td>
<td>Great Plains Archaeology</td>
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<tr>
<td>ANTH 456</td>
<td>Archaeology and the Public</td>
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<td>ANTH 457</td>
<td>Lithic Technology</td>
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<td>ANTH 460</td>
<td>Field Class in Archaeology</td>
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<td>ANTH 461</td>
<td>Anthropological Report Preparation</td>
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<td>ANTH 465</td>
<td>Zooarchaeology</td>
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<tr>
<td>ANTH 478/HIST 478</td>
<td>Heritage Resource Management</td>
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<td>ANTH 492A</td>
<td>Seminar: Archaeology</td>
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Select one of the following biological anthropology courses not taken in another category: 3-4
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 330</td>
<td>Human Ecology</td>
</tr>
<tr>
<td>ANTH 370</td>
<td>Primate Behavior and Ecology</td>
</tr>
<tr>
<td>ANTH 372</td>
<td>Human Osteology</td>
</tr>
<tr>
<td>ANTH 373</td>
<td>Human Evolution</td>
</tr>
<tr>
<td>ANTH 374</td>
<td>Human Biological Variation</td>
</tr>
<tr>
<td>ANTH 375</td>
<td>Evolution of Primate Behavior</td>
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<tr>
<td>ANTH 376</td>
<td>Evolution of Human Adaptation</td>
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<td>ANTH 470</td>
<td>Paleontology Field School</td>
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<td>ANTH 472</td>
<td>Human Biology</td>
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<td>ANTH 473</td>
<td>The Neandertals</td>
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<tr>
<td>ANTH 475</td>
<td>Methods of Analysis in Paleoanthropology</td>
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<td>ANTH 492B</td>
<td>Seminar: Biological Anthropology</td>
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Select one of the following cultural anthropology courses not taken in another category: 3-8
<table>
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<th>Course Code</th>
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<tr>
<td>ANTH 310</td>
<td>Peoples and Cultures of Africa</td>
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<tr>
<td>ANTH 312</td>
<td>Modern Indian Culture and Society</td>
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<tr>
<td>ANTH 313</td>
<td>Modernization and Development</td>
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<tr>
<td>ANTH 314</td>
<td>Southeast Asian Cultures and Societies</td>
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<tr>
<td>ANTH 319</td>
<td>Latin American Peasantry</td>
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<tr>
<td>ANTH 322</td>
<td>The Anthropology of Religion</td>
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<td>ANTH 329</td>
<td>Cultural Change</td>
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<td>ANTH 334</td>
<td>Narrative Traditions and Social Experience</td>
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<tr>
<td>ANTH 335</td>
<td>Language and Culture</td>
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<td>ANTH 336</td>
<td>Art and Culture</td>
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<tr>
<td>ANTH 338</td>
<td>Gender and Anthropology</td>
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<td>ANTH 340</td>
<td>Medical Anthropology</td>
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<tr>
<td>ANTH 343</td>
<td>Applied Medical Anthropology</td>
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<tr>
<td>ANTH 412</td>
<td>Indians of North America</td>
</tr>
<tr>
<td>ANTH 413</td>
<td>Indigenous Peoples Today</td>
</tr>
<tr>
<td>ANTH 414/ETST 414</td>
<td>Development in Indian Country</td>
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<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
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<tr>
<td>ANTH 422/SOC 422</td>
<td>Comparative Legal Systems</td>
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<tr>
<td>ANTH 423</td>
<td>Cultural Psychiatry</td>
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<tr>
<td>ANTH 440</td>
<td>Theory in Cultural Anthropology</td>
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<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
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<td>ANTH 442</td>
<td>Ethnographic Field School</td>
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<td>ANTH 443</td>
<td>Ethnographic Field Methods</td>
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<td>ANTH 444</td>
<td>Cultures of Virtual Worlds–Research Methods</td>
</tr>
<tr>
<td>ANTH 445</td>
<td>Psychological Anthropology</td>
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<tr>
<td>ANTH 446</td>
<td>New Orleans and the Caribbean</td>
</tr>
<tr>
<td>ANTH 449</td>
<td>Participatory Monitoring and Evaluation</td>
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Anthropology Electives: 6
Advanced Writing 2 3 30-32
Electives 0-9 14-16 120
Senior

Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:

ANTH 493 Capstone Seminar 4C 1
Select one AUCC 4A course from the following not taken in another category. 3-4

Cultural Anthropology:
ANTH 314 Southeast Asian Cultures and Societies 4A
ANTH 329 Cultural Change 4A
ANTH 334 Narrative Traditions and Social Experience 4A
ANTH 335 Language and Culture 4A
ANTH 338 Gender and Anthropology 4A
ANTH 340 Medical Anthropology 4A
ANTH 412 Indians of North America 4A
ANTH 413 Indigenous Peoples Today 4A
ANTH 414 Development in Indian Country 4A
ANTH 415 Indigenous Ecologies and the Modern World 4A
ANTH 423 Cultural Psychiatry 4A
ANTH 444 Cultures of Virtual Worlds—Research Methods 4A
ANTH 446 New Orleans and the Caribbean 4A
ANTH 479/IE 479 International Development Theory and Practice 4A

Archaeology:
ANTH 450 Hunter-Gatherer Ecology 4A
ANTH 451 Andean Archaeology and Ethnohistory 4A
ANTH 452 Archaeology of Mesoamerica 4A
ANTH 453 Impacts on Ancient Environments 4A
ANTH 455 Great Plains Archaeology 4A
ANTH 456 Archaeology and the Public 4A
ANTH 461 Anthropological Report Preparation 4A

Biological Anthropology:
ANTH 330 Human Ecology 4A
ANTH 373 Human Evolution 4A
ANTH 374 Human Biological Variation 4A
ANTH 376 Evolution of Human Adaptation 4A
ANTH 472 Human Biology 4A

Additional Humanities 3
Additional Social Sciences 5
Anthropology Elective 6
Electives 8

Total Credits 27-29

Program Total Credits: 120

1 ANTH 100 fulfills All-University Core Curriculum (AUCC) category 3C. Taking ANTH 100 in the freshman year will eliminate the requirement for 3 credits of Social and Behavioral Sciences in the sophomore year. If ANTH 200 is chosen in the freshman year instead, then 3 credits of Social and Behavioral Sciences will be required in the sophomore year, selected from the list of courses in category 3C of the AUCC.

2 ANTH 200 fulfills AUCC category 3E. Taking ANTH 200 in the freshman year will eliminate the requirement for 3 credits of Global and Cultural Awareness in the sophomore year. If ANTH 100 is chosen in the freshman year instead, then 3 credits of Global and Cultural Awareness will be required in the sophomore year, selected from the list of courses in category 3E of the AUCC.

3 Additional Humanities courses taken in the freshman and senior years for a total of six credits must include two subject codes, selected from among the following: ART, D, CO, E, ETST 430, L**, LB 192 (Arts and Humanities sections only), MU, PHIL, SPCM, TH.
Select 7 credits including two subject codes and at least one formal laboratory from the following: AA, BMS, BIO, BZ, CHEM, GEOL, GR 210, LIFE, MATH, NR, NSCI, PH, SOCR, and STAT.

Select a total of 9 credits over the sophomore, junior and senior years as shown, and including at least two subject codes, from the following: ECON, HIST, JTC, POLS, PSY, SOC, LB 192 (social science sections only), ETST (except ETST 430).

Select any course with the ANTH or GR subject code.

ANTH 493 must be taken concurrently with one of the AUCC 4A anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499, 3 credits) are also required to register for ANTH 493 (1 credit).

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Freshman

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<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
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<td>ANTH 200</td>
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### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GR 100</td>
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<td>3C</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>3</td>
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<tr>
<td>Additional Natural Science with Lab (See allowable subject codes on Concentration Requirements Tab)</td>
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### Semester 4

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<tbody>
<tr>
<td>Arts and Humanities</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>X</td>
<td>3C</td>
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<td>ANTH*** or GR*** Elective</td>
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<tr>
<td>Additional Natural Sciences (See allowable subject codes on Concentration Requirements Tab)</td>
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</table>
Major in Anthropology, Archaeology Concentration

The Archaeology concentration at CSU focuses on the Americas and includes prehistoric and historic archaeology. The faculty members of this sub-discipline have expertise in:

- Rocky Mountain and Plains Archaeology
- Paleo-Indian Studies
- Hunter-Gatherer Ecology
- Taphonomy
- Zooarchaeology
- Public Archaeology
- Andean Archaeology
- Inca and Spanish Empires
- Mining Communities
- Mesoamerican Archaeology
- Landscape Archaeology
- Legacies of Resilience Project (LORE-LPG)

Special resources include the Center for Mountain and Plains Archaeology; the MesoAmerican lab; and the Cultural Resources section of the Center for the Ecological Study of Military Lands. The archaeology program sponsors an annual field school each summer and houses the CSU Archaeological Repository.

Requirements
Effective Spring 2015
### Freshman

Select one from the following:  

<table>
<thead>
<tr>
<th>Course Code</th>
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<tr>
<td>ANTH 100¹</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
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<td>ANTH 200²</td>
<td>Cultures and the Global System (GT-SS3)</td>
<td>3E</td>
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<tr>
<td>ANTH 120</td>
<td>Human Origins and Variation (GT-SC2)</td>
<td>3A</td>
<td>3</td>
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<tr>
<td>ANTH 121</td>
<td>Human Origins and Variation Laboratory (GT-SC1)</td>
<td>3A</td>
<td>1</td>
</tr>
<tr>
<td>ANTH 140</td>
<td>Introduction to Prehistory (GT-HI1)</td>
<td>3D</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>Additional Humanities³</td>
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<td>Mathematics</td>
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<td>Electives</td>
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**Total Credits:** 30

### Sophomore

ANTH 360 Archaeological Investigation  

Select one course from the following:  

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<tbody>
<tr>
<td>GEOL 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>GEOL 122</td>
<td>The Blue Planet: Geology of Our Environment (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>GEOL 124</td>
<td>Geology of Natural Resources (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>GEOL 121</td>
<td>Introductory Geology Laboratory (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
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<tr>
<td>Additional Natural Sciences⁴</td>
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<tr>
<td>Additional Social Sciences⁵</td>
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<tr>
<td>Arts and Humanities</td>
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Select one from the following:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Global and Cultural Awareness²</td>
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<td>3E</td>
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<tr>
<td>Social and Behavioral Sciences¹</td>
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<td>3C</td>
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**Total Credits:** 31

### Junior

Select one course from the following:  

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<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 365</td>
<td>Quantifying Anthropology</td>
<td>3</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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<tr>
<td>STAT 311</td>
<td>Statistics for Behavioral Sciences I</td>
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<tr>
<td>ANTH 400</td>
<td>History of Anthropological Thought</td>
<td>4B</td>
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</table>

Select one of the following Archaeological Concepts and Practice courses not taken in another category:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANTH 450</td>
<td>Hunter-Gatherer Ecology</td>
<td></td>
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<tr>
<td>ANTH 453</td>
<td>Impacts on Ancient Environments</td>
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</tr>
<tr>
<td>ANTH 456</td>
<td>Archaeology and the Public</td>
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<tr>
<td>ANTH 460</td>
<td>Field Class in Archaeology</td>
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<tr>
<td>ANTH 461</td>
<td>Anthropological Report Preparation</td>
<td></td>
</tr>
<tr>
<td>ANTH 478/HIST 478</td>
<td>Anthropological Heritage Resource Management</td>
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</table>

Select one of the following Archaeological Methods courses not taken in another category:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 352</td>
<td>Geoarchaeology</td>
<td></td>
</tr>
<tr>
<td>ANTH 372</td>
<td>Human Osteology</td>
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<tr>
<td>ANTH 457</td>
<td>Lithic Technology</td>
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<tr>
<td>ANTH 465</td>
<td>Zooarchaeology</td>
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Select one of the following biological anthropology courses not taken in another category:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 330</td>
<td>Human Ecology</td>
<td></td>
</tr>
</tbody>
</table>
ANTH 370  Primate Behavior and Ecology
ANTH 372  Human Osteology
ANTH 373  Human Evolution
ANTH 374  Human Biological Variation
ANTH 375  Evolution of Primate Behavior
ANTH 376  Evolution of Human Adaptation
ANTH 470  Paleontology Field School
ANTH 472  Human Biology
ANTH 473  The Neandertals
ANTH 475  Methods of Analysis in Paleoanthropology
ANTH 492B  Seminar: Biological Anthropology

Select one of the following cultural anthropology courses not taken in another category: 3-8
ANTH 310  Peoples and Cultures of Africa
ANTH 312  Modern Indian Culture and Society
ANTH 313  Modernization and Development
ANTH 314  Southeast Asian Cultures and Societies
ANTH 319  Latin American Peasantries
ANTH 322  The Anthropology of Religion 4A
ANTH 329  Cultural Change
ANTH 334  Narrative Traditions and Social Experience
ANTH 335  Language and Culture
ANTH 336  Art and Culture
ANTH 338  Gender and Anthropology
ANTH 340  Medical Anthropology
ANTH 343  Applied Medical Anthropology
ANTH 412  Indians of North America
ANTH 413  Indigenous Peoples Today
ANTH 414/ETST 414  Development in Indian Country
ANTH 415  Indigenous Ecologies and the Modern World
ANTH 422/SOC 422  Comparative Legal Systems
ANTH 423  Cultural Psychiatry 4A
ANTH 440  Theory in Cultural Anthropology
ANTH 441  Method in Cultural Anthropology
ANTH 442  Ethnographic Field School
ANTH 443  Ethnographic Field Methods
ANTH 444  Cultures of Virtual Worlds--Research Methods
ANTH 445  Psychological Anthropology 4A
ANTH 446  New Orleans and the Caribbean
ANTH 449  Participatory Monitoring and Evaluation
ANTH 479/IE 479  International Development Theory and Practice

Advanced Writing 2 3
Electives 0-9

Total Credits 30-31

Senior

Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:
ANTH 493  Capstone Seminar 4C 1

Select one of the following AUCC 4A courses not taken in another category: 3
ANTH 450  Hunter-Gatherer Ecology 4A
ANTH 451  Andean Archaeology and Ethnohistory 4A
ANTH 452  Archaeology of Mesoamerica 4A
ANTH 453  Impacts on Ancient Environments 4A
Major in Anthropology, Archaeology Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANTH 455</td>
<td>Great Plains Archaeology</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 456</td>
<td>Archaeology and the Public</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 461</td>
<td>Anthropological Report Preparation</td>
<td>4A</td>
</tr>
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</table>

Select one of the following Place and Space in Archaeology courses not taken in another category:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 350</td>
<td>Archaeology of North America</td>
</tr>
<tr>
<td>ANTH 351</td>
<td>Archaeology of Europe and Africa</td>
</tr>
<tr>
<td>ANTH 359</td>
<td>Colorado Prehistory</td>
</tr>
<tr>
<td>ANTH 451</td>
<td>Andean Archaeology and Ethnohistory</td>
</tr>
<tr>
<td>ANTH 452</td>
<td>Archaeology of Mesoamerica</td>
</tr>
<tr>
<td>ANTH 455</td>
<td>Great Plains Archaeology</td>
</tr>
<tr>
<td>ANTH 492A</td>
<td>Seminar: Archaeology</td>
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</table>

Additional Humanities 3

Additional Social Sciences 3

Electives 7

Total Credits 28-29

Program Total Credits: 120

1. ANTH 100 fulfills category 3C in the All-University Core Curriculum (AUCC). Taking ANTH 100 in the freshman year will eliminate the requirement for 3 credits of Social and Behavioral Sciences in the sophomore year. If ANTH 200 is chosen in the freshman year instead, then 3 credits of Social and Behavioral Sciences will be required in the sophomore year, selected from the list of courses in category 3C of the AUCC.

2. ANTH 200 fulfills AUCC category 3E. Taking ANTH 200 in the freshman year will eliminate the requirement for 3 credits of Global and Cultural Awareness in the sophomore year. If ANTH 100 is chosen in the freshman year, then 3 credits of Global and Cultural Awareness will be required in the sophomore year, selected from the list of courses in category 3E of the AUCC.

3. Additional Humanities courses taken in the freshman and senior years for a total of six credits must include two subject codes, selected from among the following: ART, D, CO, E, ETST 430, L**, LB 192 (Arts and Humanities sections only), MU, PHIL, SPCM, TH.

4. Select 6 credits including two subject codes from the following: AA, BMS, BIO, BZ, CHEM, GEOL, GR 210, LIFE, MATH, NR, NSCI, PH, SOCR, and STAT.

5. Select a total of 9 credits over the sophomore, junior and senior years as shown and including at least two subject codes from the following: ECON, HIST, JTC, POLS, PSY, SOC, LB 192 (social science sections only), ETST (except ETST 430).

6. ANTH 493 must be taken concurrently with one of the AUCC 4A cultural anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499, 3 credits) also are required to register for ANTH 493 (1 credit).

7. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300 to 400-level).

Major Completion Map

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
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<td>Select one course from the following:</td>
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<tr>
<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
<td>X</td>
<td>3E</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>1A</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Additional Humanities (See allowable subject codes on Concentration Requirements Tab)</td>
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<tr>
<td>Elective</td>
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Total Credits 15

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<tr>
<td>ANTH 120</td>
<td>Human Origins and Variation (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 121</td>
<td>Human Origins and Variation Laboratory (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>1</td>
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<tr>
<td>ANTH 140</td>
<td>Introduction to Prehistory (GT-HI1)</td>
<td>X</td>
<td>3D</td>
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<tr>
<td>Electives</td>
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Total Credits 15
AUCC 1B (MATH), CO 150, Additional Humanities must be completed by the end of Semester 2.

| Total Credits | 15 |

**Sophomore**

<table>
<thead>
<tr>
<th>Semester 3</th>
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<tr>
<td>GEO 120 Exploring Earth: Physical Geology (GT-SC2)</td>
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<tr>
<td>GEO 122 The Blue Planet: Geology of Our Environment (GT-SC2)</td>
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<tr>
<td>GEO 124 Geology of Natural Resources (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>GEO 121 Introductory Geology Laboratory (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>GR 100 Introduction to Geography (GT-SS2)</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
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<tr>
<td>Additional Natural Sciences (See allowable subject codes on Concentration Requirements Tab)</td>
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</tr>
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<td>Additional Social Sciences (See allowable subject codes on Concentration Requirements Tab)</td>
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| Total Credits | 16 |

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<tbody>
<tr>
<td>ANTH 360 Archaeological Investigation</td>
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<tr>
<td>Arts and Humanities</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Additional Natural Science (See allowable subject codes on Concentration Requirements Tab)</td>
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<td>Additional Social Science (See allowable subject codes on Concentration Requirements Tab)</td>
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| Total Credits | 15 |

**Junior**

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<tbody>
<tr>
<td>Select one course from the following:</td>
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<tr>
<td>ANTH 365 Quantifying Anthropology</td>
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<tr>
<td>STAT 301 Introduction to Statistical Methods</td>
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<tr>
<td>STAT 307 Introduction to Biostatistics</td>
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<tr>
<td>STAT 311 Statistics for Behavioral Sciences I</td>
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<tr>
<td>Advanced Writing</td>
<td>2</td>
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<tr>
<td>Select one Archaeological Concepts and Practice course not taken in another category (See List on Concentration Requirements Tab)</td>
<td>3-8</td>
<td></td>
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<tr>
<td>Select one Archaeological Methods course not taken in another category (See List on Concentration Requirements Tab)</td>
<td>3</td>
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<tr>
<td>Select one Biological Anthropology course not taken in another category (See List on Concentration Requirements Tab)</td>
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| Total Credits | 15-20 |

<table>
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<tbody>
<tr>
<td>ANTH 400 History of Anthropological Thought</td>
<td>X</td>
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<tr>
<td>Select one Cultural Anthropology course not taken in another category (See List on Concentration Requirements Tab)</td>
<td>3-8</td>
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<td>Electives</td>
<td>0-9</td>
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| Total Credits | 11-15 |

**Senior**

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<tbody>
<tr>
<td>Additional Humanities (See allowable subject codes on Concentration Requirements Tab)</td>
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| Total Credits | 3 |
Additional Social Sciences (See allowable subject codes on Concentration Requirements Tab) 3
Electives 9

Semester 8

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<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
<th>Total Credits</th>
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<tbody>
<tr>
<td>ANTH 493</td>
<td>Capstone Seminar</td>
<td>X</td>
<td>4C</td>
<td>1</td>
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<tr>
<td>AUCC 4A</td>
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<td>X</td>
<td>4A</td>
<td>3</td>
</tr>
<tr>
<td>Select one Place and Space in Archaeology course not taken in another category (See List on Concentration Requirements Tab)</td>
<td>X</td>
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<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>6-7</td>
</tr>
</tbody>
</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 13-14
Program Total Credits: 120

Major in Anthropology, Biological Anthropology Concentration

Over the past half century biological anthropology has undergone tremendous change from a discipline that was defined by a descriptive, typological approach to human morphology to one that includes both experimental and comparative analyses in a population based framework.

Biological anthropologists continue to cross traditional disciplinary boundaries and interact with both the physical and natural sciences, including biology, anatomy, genetics, chemistry, biometry, or endocrinology as well as the social sciences.

The expertise of existing faculty in Biological Anthropology at CSU includes:

- Human skeletal biology
- Evolutionary theory
- Neanderthal paleobiology and paleobiogeography
- Dental anthropology
- Public Health
- Early hominin feeding ecology
- Taphonomy
- Plio-Pleistocene Africa
- Pleistocene Asia

Special resources include the Paleoanthropology and Zooarchaeology lab, the Human Origins Lab and the Bioanthropology Lab. Existing faculty also have geographic foci significant to their research. Research areas include Uzbekistan, Kazakhstan, Tanzania, and Mexico.

Requirements

Effective Spring 2015

Freshman

Select one from the following:

<table>
<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 100</td>
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<tr>
<td>ANTH 200</td>
<td>3E</td>
</tr>
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<td>ANTH 120</td>
<td>3A</td>
</tr>
<tr>
<td>ANTH 121</td>
<td>3A</td>
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<td>ANTH 140</td>
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<td>CO 150</td>
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Additional Humanities 3

Mathematics 1B

Electives

Total Credits 30

Sophomore

Select one course from the following:

<table>
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<tr>
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<tbody>
<tr>
<td>ANTH 365</td>
<td>Quantifying Anthropology</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
</tr>
</tbody>
</table>

Total Credits 3
Select one science course group of 9-11 credits from the following:

### Anatomy:
- **BMS 301** Human Gross Anatomy
- **BZ 110** Principles of Animal Biology (GT-SC2) 3A
- **BZ 111** Animal Laboratory (GT-SC1) 3A

### Evolution:
- **BZ 110** Principles of Animal Biology (GT-SC2) 3A
- **BZ 111** Animal Laboratory (GT-SC1) 3A
- **BZ 220** Introduction to Evolution
- **BZ 424/BSPM 424** Principles of Systematic Zoology

### Genetics (A):
- **BZ 110** Principles of Animal Biology (GT-SC2) 3A
- **BZ 111** Animal Laboratory (GT-SC1) 3A
- **BZ 220** Introduction to Evolution
- **BZ 350** Molecular and General Genetics

### Genetics (B):
- **LIFE 102** Attributes of Living Systems (GT-SC1) 3A
- **LIFE 103** Biology of Organisms-Animals and Plants
- **LIFE 201A or 201B** Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2) 3A
  
  Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)

### Health and Epidemiology:
- **BZ 101, 110, ERHS 332, or LIFE 102** Humans and Other Animals (GT-SC2), Principles of Animal Biology (GT-SC2), Principles of Epidemiology, Attributes of Living Systems (GT-SC1)
- **ERHS 220** Environmental Health
- **ERHS 430** Human Disease and the Environment
- **GR 100** Introduction to Geography (GT-SS2) 3C

### Additional Social Sciences
- **ARTS 323** 3B

### Arts and Humanities
- **ARTS 420** 3B

Select one of the following:
- **Global and Cultural Awareness** 3E
- **Social and Behavioral Science** 3C

Total Credits: 30-32

### Junior

**ANTH 400** History of Anthropological Thought 4B 3

Select one biological anthropology Concepts and Practice course from the following not taken in another semester or category:
- **ANTH 370** Primate Behavior and Ecology
- **ANTH 372** Human Osteology
- **ANTH 373** Human Evolution
- **ANTH 374** Human Biological Variation
- **ANTH 375** Evolution of Primate Behavior
- **ANTH 376** Evolution of Human Adaptation
- **ANTH 470** Paleontology Field School
- **ANTH 472** Human Biology
- **ANTH 473** The Neandertals
- **ANTH 475** Methods of Analysis in Paleoanthropology

Select one archaeology course from the following not taken in another category: 3-8
- **ANTH 350** Archaeology of North America
- **ANTH 351** Archaeology of Europe and Africa
<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>ANTH 352</td>
<td>Geoarchaeology</td>
</tr>
<tr>
<td>ANTH 359</td>
<td>Colorado Prehistory</td>
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<tr>
<td>ANTH 360</td>
<td>Archaeological Investigation</td>
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<tr>
<td>ANTH 450</td>
<td>Hunter-Gatherer Ecology</td>
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<tr>
<td>ANTH 451</td>
<td>Andean Archaeology and Ethnohistory</td>
</tr>
<tr>
<td>ANTH 452</td>
<td>Archaeology of Mesoamerica</td>
</tr>
<tr>
<td>ANTH 453</td>
<td>Impacts on Ancient Environments</td>
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<tr>
<td>ANTH 455</td>
<td>Great Plains Archaeology</td>
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<tr>
<td>ANTH 456</td>
<td>Archaeology and the Public</td>
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<tr>
<td>ANTH 457</td>
<td>Lithic Technology</td>
</tr>
<tr>
<td>ANTH 460</td>
<td>Field Class in Archaeology</td>
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<tr>
<td>ANTH 461</td>
<td>Anthropological Report Preparation</td>
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<tr>
<td>ANTH 465</td>
<td>Zooarchaeology</td>
</tr>
<tr>
<td>ANTH 478/HIST 478</td>
<td>Heritage Resource Management</td>
</tr>
<tr>
<td>ANTH 492A</td>
<td>Seminar: Archaeology</td>
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</table>

Select one biological anthropology Concepts and Practice course from the following not taken in another semester or category: 3

<table>
<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>ANTH 370</td>
<td>Primate Behavior and Ecology</td>
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<td>ANTH 372</td>
<td>Human Osteology</td>
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<tr>
<td>ANTH 373</td>
<td>Human Evolution</td>
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<td>ANTH 374</td>
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<tr>
<td>ANTH 375</td>
<td>Evolution of Primate Behavior</td>
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<td>ANTH 376</td>
<td>Evolution of Human Adaptation</td>
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<td>ANTH 470</td>
<td>Paleontology Field School</td>
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<tr>
<td>ANTH 472</td>
<td>Human Biology</td>
</tr>
<tr>
<td>ANTH 473</td>
<td>The Neandertals</td>
</tr>
<tr>
<td>ANTH 475</td>
<td>Methods of Analysis in Paleoanthropology</td>
</tr>
</tbody>
</table>

Select one biological anthropology Methods course from the following not taken in another category: 3-4

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>ANTH 372</td>
<td>Human Osteology</td>
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<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
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<td>ANTH 457</td>
<td>Lithic Technology</td>
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<tr>
<td>ANTH 465</td>
<td>Zooarchaeology</td>
</tr>
<tr>
<td>ANTH 470</td>
<td>Paleontology Field School</td>
</tr>
<tr>
<td>ANTH 475</td>
<td>Methods of Analysis in Paleoanthropology</td>
</tr>
<tr>
<td>GR 420</td>
<td>Spatial Analysis with GIS</td>
</tr>
<tr>
<td>NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
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</table>

Select one cultural anthropology course from the following not taken in another category: 3-8

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
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<tbody>
<tr>
<td>ANTH 310</td>
<td>Peoples and Cultures of Africa</td>
</tr>
<tr>
<td>ANTH 312</td>
<td>Modern Indian Culture and Society</td>
</tr>
<tr>
<td>ANTH 313</td>
<td>Modernization and Development</td>
</tr>
<tr>
<td>ANTH 314</td>
<td>Southeast Asian Cultures and Societies</td>
</tr>
<tr>
<td>ANTH 319</td>
<td>Latin American Peasantries</td>
</tr>
<tr>
<td>ANTH 322</td>
<td>The Anthropology of Religion</td>
</tr>
<tr>
<td>ANTH 329</td>
<td>Cultural Change</td>
</tr>
<tr>
<td>ANTH 334</td>
<td>Narrative Traditions and Social Experience</td>
</tr>
<tr>
<td>ANTH 335</td>
<td>Language and Culture</td>
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<tr>
<td>ANTH 336</td>
<td>Art and Culture</td>
</tr>
<tr>
<td>ANTH 338</td>
<td>Gender and Anthropology</td>
</tr>
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<td>ANTH 340</td>
<td>Medical Anthropology</td>
</tr>
<tr>
<td>ANTH 343</td>
<td>Applied Medical Anthropology</td>
</tr>
<tr>
<td>ANTH 412</td>
<td>Indians of North America</td>
</tr>
<tr>
<td>ANTH 413</td>
<td>Indigenous Peoples Today</td>
</tr>
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<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>ANTH 414/ETST 414</td>
<td>Development in Indian Country</td>
</tr>
<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
</tr>
<tr>
<td>ANTH 422/SOC 422</td>
<td>Comparative Legal Systems</td>
</tr>
<tr>
<td>ANTH 423</td>
<td>Cultural Psychiatry</td>
</tr>
<tr>
<td>ANTH 440</td>
<td>Theory in Cultural Anthropology</td>
</tr>
<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
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<tr>
<td>ANTH 442</td>
<td>Ethnographic Field School</td>
</tr>
<tr>
<td>ANTH 443</td>
<td>Ethnographic Field Methods</td>
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<td>ANTH 444</td>
<td>Cultures of Virtual Worlds–Research Methods</td>
</tr>
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<td>ANTH 445</td>
<td>Psychological Anthropology</td>
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<td>ANTH 446</td>
<td>New Orleans and the Caribbean</td>
</tr>
<tr>
<td>ANTH 449</td>
<td>Participatory Monitoring and Evaluation</td>
</tr>
<tr>
<td>ANTH 479/IE 479</td>
<td>International Development Theory and Practice</td>
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</tbody>
</table>

Advanced Writing 2  3
Electives 0-9

Total Credits 30-31

Senior

Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:

ANTH 493 1  Capstone Seminar  4C  1

Select one AUCC 4A biological anthropology course from the following not taken in another semester or category 5

ANTH 330  Human Ecology  4A
ANTH 373  Human Evolution  4A
ANTH 374  Human Biological Variation  4A
ANTH 376  Evolution of Human Adaptation  4A
ANTH 472  Human Biology  4A

Select two biological anthropology Concepts and Practice courses from the following not taken in another semester or category:

ANTH 370  Primate Behavior and Ecology
ANTH 372  Human Osteology
ANTH 373  Human Evolution
ANTH 374  Human Biological Variation
ANTH 375  Evolution of Primate Behavior
ANTH 376  Evolution of Human Adaptation
ANTH 470  Paleontology Field School
ANTH 472  Human Biology
ANTH 473  The Neandertals
ANTH 475  Methods of Analysis in Paleoanthropology

Additional Humanities 3  3
Additional Social Sciences 4  3
Electives 6  11-14

Total Credits 27-30

Program Total Credits: 120

---

1 ANTH 100 fulfills All-University Core Curriculum (AUCC) category 3C. Taking ANTH 100 in the freshman year will eliminate the requirement for 3 credits of Social and Behavioral Sciences in the sophomore year. If ANTH 200 is chosen in the freshman year instead, then 3 credits of Social and Behavioral Sciences will be required in the sophomore year, selected from the list of courses in category 3C of the AUCC.

2 ANTH 200 fulfills AUCC category 3E. Taking ANTH 200 in the freshman year will eliminate the requirement for 3 credits of Global and Cultural Awareness in the sophomore year. If ANTH 100 is chosen in the freshman year instead, then 3 credits of Global and Cultural Awareness will be required in the sophomore year, selected from the list of courses in category 3E of the AUCC.

3 Additional Humanities courses taken in the freshman and senior years for a total of six credits must include two subject codes, selected from among the following: ART, D, CO, E, ETST 430, L***, LB 192 (Arts and Humanities sections only), MU, PHIL, SPCM, TH.
Select a total of 9 credits over the sophomore, junior and senior years as shown, and including at least two subject codes, from the following: ECON, HIST, JTC, POLS, PSY, SOC, LB 192 (social science sections only), ETST (except ETST 430).

Capstone topic must focus on geography. ANTH 493 must be taken concurrently with one of the AUCC 4A anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499, 3 credits) are also required to register for ANTH 493 (1 credit).

Select enough elective credits to bring program total to a minimum of 120 credits, to which at least 42 must be upper-division (300- to 400-level).

### Major Completion Map

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
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<td>3C</td>
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<tr>
<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
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<td>3E</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>Mathematics</td>
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<td>3</td>
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<td>Additional Humanities (See allowable subject codes on Concentration Requirements Tab)</td>
<td>X</td>
<td></td>
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<tr>
<td>Elective</td>
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**Total Credits**

15

#### Sophomore

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<tr>
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<tr>
<td>ANTH 365</td>
<td>Quantifying Anthropology</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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<tr>
<td>STAT 311</td>
<td>Statistics for Behavioral Sciences I</td>
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<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
<td>3C</td>
<td>3</td>
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</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
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<td></td>
</tr>
<tr>
<td>Additional Social Sciences (See allowable subject codes on Concentration Requirements Tab)</td>
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</table>

**Select one Science Course Group (See List on Concentration Requirements Tab) | 3-4 |

**Total Credits**

15-16

#### Semester 4

<table>
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<tr>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
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<td>Select one course from the following:</td>
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</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>X</td>
<td>3C</td>
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<tr>
<td>Additional Social Science (See allowable subject codes on Concentration Requirements Tab)</td>
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</table>
Select one Science Course Group (See List on Concentration Requirements Tab)  

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<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>Advanced Writing</td>
<td></td>
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<td>3</td>
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<td>Select one Archaeology course not taken in another category (See List on Concentration Requirements Tab)</td>
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<td>3-8</td>
</tr>
<tr>
<td>Select one Biological Anthropology Concepts and Practice course not taken in another category (See List on Concentration Requirements Tab)</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>Select one Biological Anthropology Methods course not taken in another category (See List on Concentration Requirements Tab)</td>
<td></td>
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<td>3-4</td>
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<tr>
<td>Elective</td>
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Total Credits: 15-16

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<tbody>
<tr>
<td>ANTH 400 History of Anthropological Thought</td>
<td>X</td>
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<td>Select one Biological Anthropology Concepts and Practice course not taken in another category (See List on Concentration Requirements Tab)</td>
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<td>3</td>
</tr>
<tr>
<td>Select one Cultural Anthropology course not taken in another category (See List on Concentration Requirements Tab)</td>
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<td></td>
<td>3-8</td>
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<tr>
<td>Electives</td>
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Total Credits: 15-17

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<tr>
<td>ANTH 493 Capstone Seminar</td>
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<td>4C</td>
<td>1</td>
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<td>AUCC 4A: Select one course not taken elsewhere from the AUCC 4A List on the Concentration Requirements Tab</td>
<td>X</td>
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<td>4A</td>
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<tr>
<td>Additional Humanities (See allowable subject codes on Concentration Requirements Tab)</td>
<td>X</td>
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<td></td>
<td>3</td>
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<tr>
<td>Additional Social Sciences (See allowable subject codes on Concentration Requirements Tab)</td>
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<tr>
<td>Select one Biological Anthropology Concepts and Practice course not taken in another category (See List on Concentration Requirements Tab)</td>
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<td>Elective</td>
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Total Credits: 14-15

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Total Credits: 13-16

Major in Anthropology, Cultural Anthropology Concentration

The Cultural Anthropology concentration focuses on contemporary experiences of culturally distinct communities encountering a rapidly globalizing political economy. Students are provided with robust training in mixed methods, community-based approaches, and applied anthropology. Topically, faculty investigate issues related to the transformation of individual experience and community relations within the context of economic development, governmental and nongovernmental policy, and environmental change. Increasingly, faculty seek to understand the way subjective and material well-being are impacted by the rapidly changing contexts of modernity. Topics of research interest include:

- Human-Environment Interactions
- Community and Economic Development
- Health and Well-Being
- Cultural Psychiatry
- Disasters and Resilience
- Gender
• Culture Continuity and Change

Passionate about teaching, faculty strive to bring excitement and relevance to the classroom by infusing it with their practical field experiences. Cultural faculty conduct their research in India, Southeast Asia, Central Asia, East Africa, the Caribbean, New Orleans, Native North America, and in virtual reality. Students concentrating in Cultural Anthropology explore issues of place and space, cultural theory, cultural content and methods.

## Requirements

### Effective Spring 2015

#### Freshman

<table>
<thead>
<tr>
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| Total Credits | 30 |

#### Sophomore

Select one Place and Space in Cultural Anthropology course from the following not taken in another category: 3

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<tr>
<td>ANTH 310</td>
<td>Peoples and Cultures of Africa</td>
</tr>
<tr>
<td>ANTH 312</td>
<td>Modern Indian Culture and Society</td>
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<td>ANTH 314</td>
<td>Southeast Asian Cultures and Societies</td>
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<tr>
<td>ANTH 412</td>
<td>Indians of North America</td>
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<td>ANTH 413</td>
<td>Indigenous Peoples Today</td>
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<td>ANTH 446</td>
<td>New Orleans and the Caribbean</td>
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<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
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<td>Additional Natural Sciences</td>
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<td>Biological and Physical Sciences</td>
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<tr>
<td>Select one from the following:</td>
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<td>Global and Cultural Awareness</td>
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| Total Credits | 31 |

#### Junior

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<td>Quantifying Anthropology</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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<td>STAT 311</td>
<td>Statistics for Behavioral Sciences I</td>
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<td>ANTH 400</td>
<td>History of Anthropological Thought</td>
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Select one archaeology course from the following not taken in another category: 3-8

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<td>ANTH 351</td>
<td>Archaeology of Europe and Africa</td>
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<td>ANTH 352</td>
<td>Geoarchaeology</td>
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<td>ANTH 359</td>
<td>Colorado Prehistory</td>
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ANTH 450  Hunter-Gatherer Ecology
ANTH 451  Andean Archaeology and Ethnohistory 4A
ANTH 452  Archaeology of Mesoamerica 4A
ANTH 453  Impacts on Ancient Environments
ANTH 455  Great Plains Archaeology 4A
ANTH 456  Archaeology and the Public
ANTH 457  Lithic Technology
ANTH 460  Field Class in Archaeology
ANTH 461  Anthropological Report Preparation
ANTH 465  Zooarchaeology
ANTH 478/HIST 478  Heritage Resource Management
ANTH 492A  Seminar: Archaeology

Select one biological anthropology course from the following not taken in another category: 3-4

ANTH 330  Human Ecology
ANTH 370  Primate Behavior and Ecology
ANTH 372  Human Osteology
ANTH 373  Human Evolution
ANTH 374  Human Biological Variation
ANTH 375  Evolution of Primate Behavior
ANTH 376  Evolution of Human Adaptation
ANTH 470  Paleontology Field School
ANTH 472  Human Biology
ANTH 473  The Neandertals
ANTH 475  Methods of Analysis in Paleoanthropology
ANTH 492B  Seminar: Biological Anthropology

Select one cultural content course from the following not taken in another category: 3-4

ANTH 313  Modernization and Development
ANTH 330  Human Ecology
ANTH 334  Narrative Traditions and Social Experience
ANTH 335  Language and Culture
ANTH 336  Art and Culture
ANTH 340  Medical Anthropology
ANTH 414/ETST 414  Development in Indian Country
ANTH 423  Cultural Psychiatry 4A

Select one cultural theory course from the following not taken in another category: 3

ANTH 322  The Anthropology of Religion 4A
ANTH 329  Cultural Change
ANTH 338  Gender and Anthropology
ANTH 415  Indigenous Ecologies and the Modern World
ANTH 440  Theory in Cultural Anthropology
ANTH 445  Psychological Anthropology 4A
ANTH 479/IE 479  International Development Theory and Practice

Advanced Writing 2
Electives 3-9

Total Credits 30

Senior

Select one cultural methods course from the following not taken in another category: 3

ANTH 343  Applied Medical Anthropology
ANTH 441  Method in Cultural Anthropology
ANTH 442  Ethnographic Field School
ANTH 443  Ethnographic Field Methods
### Major Completion Map

#### Freshman

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<td>Mathematics</td>
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**Additional Humanities (See allowable subject codes on Concentration Requirements Tab)**

| Elective | 3 |

**Semester 2**

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**AUCC 1B (MATH), Additional Humanities, CO 150 must be completed by the end of Semester 2.**

**Total Credits** 15

**Sophomore**

**Semester 3**

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<td>Additional Natural Science (See allowable subject codes on Concentration Requirements Tab)</td>
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<td>Additional Social Science (See allowable subject codes on Concentration Requirements Tab)</td>
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<td>Select one Place and Space in Cultural Anthropology course not taken in another category (See List on Concentration Requirements Tab)</td>
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**Total Credits** 16

**Semester 4**

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**Total Credits** 15

**Junior**

**Semester 5**

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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<td>STAT 307</td>
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<td>Statistics for Behavioral Sciences I</td>
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**Total Credits** 15-18

**Semester 6**

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<td>History of Anthropological Thought</td>
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<td>Select one Cultural Content course not taken in another category (See List on Concentration Requirements Tab)</td>
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**Total Credits** 15-18
Major in Anthropology, Geography Concentration

Geography at CSU focuses on providing undergraduate students with a broad background in geographic thinking with an emphasis on the traditional geographic focus of understanding dynamic interaction between humans and the environment in an era of rapid global change. Faculty use a wide range of research methods including geographic information systems (GIS), remote sensing, spatial modeling, and dendrochronology to address applied research questions in Colorado, the Rocky Mountains, Southeast Asia, Mesoamerica, Melanesia, and southern South America. Research focus areas include:

- Climate change implications for society and ecosystems
- Land-use and land-cover change
- Biogeography

A concentration and minor in Geography are degree options within the Department of Anthropology. Current courses offered range from introductory courses that introduce students to geography and the two main branches of cultural and physical geography, to advanced courses which focus on methods (e.g. spatial analysis and GIS, remote sensing) and topical subjects such as climate change, forest ecology, mountain geography, the geography of commodities, and land change science.

Requirements

Effective Spring 2015

Freshman

Select one from the following:

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<td>Human Origins and Variation (GT-SC2)</td>
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<td>Introduction to Prehistory (GT-HI1)</td>
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Total Credits 30
### Sophomore

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### Junior

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<td>Cultural Geography</td>
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<td>NR 323 or GR 420</td>
<td>Remote Sensing and Image Interpretation</td>
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<td>Spatial Analysis with GIS</td>
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Select one archaeology course from the following not taken in another category: 3-8

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<td>Impacts on Ancient Environments</td>
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<td>Heritage Resource Management</td>
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<td>Seminar: Archaeology</td>
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Select one biological anthropology course from the following not taken in another category: 3

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<tbody>
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<td>The Neandertals</td>
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<td>Modern Indian Culture and Society</td>
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</tr>
</tbody>
</table>
| ANTH 423    | Cultural Psychiatry                             | 4A
| ANTH 440    | Theory in Cultural Anthropology                  |
| ANTH 441    | Method in Cultural Anthropology                  |
| ANTH 442    | Ethnographic Field School                        |
| ANTH 444    | Cultures of Virtual Worlds–Research Methods      |
| ANTH 445    | Psychological Anthropology                       | 4A
| ANTH 446    | New Orleans and the Caribbean                    |

Advanced Writing 2 3

Electives 3-9

Senior

ANTH 400 History of Anthropological Thought 4B 3

Students must take ANTH 493 concurrently with one of the courses listed in the selection below it:

ANTH 493 Capstone Seminar 4C 1

Select one AUCC 4A courses from the following not taken in another category: 3

Cultural Anthropology:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 314</td>
<td>Southeast Asian Cultures and Societies</td>
</tr>
<tr>
<td>ANTH 329</td>
<td>Cultural Change</td>
</tr>
<tr>
<td>ANTH 334</td>
<td>Narrative Traditions and Social Experience</td>
</tr>
<tr>
<td>ANTH 335</td>
<td>Language and Culture</td>
</tr>
<tr>
<td>ANTH 338</td>
<td>Gender and Anthropology</td>
</tr>
<tr>
<td>ANTH 340</td>
<td>Medical Anthropology</td>
</tr>
<tr>
<td>ANTH 412</td>
<td>Indians of North America</td>
</tr>
<tr>
<td>ANTH 413</td>
<td>Indigenous Peoples Today</td>
</tr>
<tr>
<td>ANTH 414</td>
<td>Development in Indian Country</td>
</tr>
<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
</tr>
<tr>
<td>ANTH 423</td>
<td>Cultural Psychiatry</td>
</tr>
<tr>
<td>ANTH 443</td>
<td>Ethnographic Field Methods</td>
</tr>
<tr>
<td>ANTH 444</td>
<td>Cultures of Virtual Worlds–Research Methods</td>
</tr>
<tr>
<td>ANTH 446</td>
<td>New Orleans and the Caribbean</td>
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</tbody>
</table>

Archaeology:

ANTH 450 Hunter-Gatherer Ecology 4A
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 451</td>
<td>Andean Archaeology and Ethnohistory</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 452</td>
<td>Archaeology of Mesoamerica</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 453</td>
<td>Impacts on Ancient Environments</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 455</td>
<td>Great Plains Archaeology</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 456</td>
<td>Archaeology and the Public</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 461</td>
<td>Anthropological Report Preparation</td>
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</table>

### Biological Anthropology:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANTH 330</td>
<td>Human Ecology</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 373</td>
<td>Human Evolution</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 374</td>
<td>Human Biological Variation</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 376</td>
<td>Evolution of Human Adaptation</td>
<td>4A</td>
</tr>
<tr>
<td>ANTH 472</td>
<td>Human Biology</td>
<td>4A</td>
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</tbody>
</table>

Select one geography Content course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
<td>3A</td>
</tr>
<tr>
<td>GR 330</td>
<td>Urban Geography</td>
<td></td>
</tr>
<tr>
<td>GR 345</td>
<td>Geography of Hazards</td>
<td></td>
</tr>
<tr>
<td>GR 410</td>
<td>Climate Change: Science, Policy, Implications</td>
<td></td>
</tr>
<tr>
<td>GR 415</td>
<td>The Geography of Commodities</td>
<td></td>
</tr>
<tr>
<td>IE 492</td>
<td>International Education Seminar</td>
<td></td>
</tr>
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</table>

### Additional Humanities

3 credits

### Additional Social Sciences

5 credits

### Electives

7-13 credits

<table>
<thead>
<tr>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-29</td>
</tr>
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</table>

Program Total Credits: 120

---

**Major Completion Map**

### Freshman Semesters

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 200</td>
<td>Cultures and the Global System (GT-SS3)</td>
<td>X</td>
<td>3E</td>
<td></td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
</tr>
</tbody>
</table>

1. ANTH 100 fulfills All-University Core Curriculum (AUCC) category 3C. Taking ANTH 100 in the freshman year will eliminate the requirement for 3 credits of Social and Behavioral Sciences in the sophomore year. If ANTH 200 is chosen in the freshman year instead, then 3 credits of Social and Behavioral Sciences will be required in the sophomore year, selected from the list of courses in category 3C of the AUCC.

2. ANTH 200 fulfills AUCC category 3E. Taking ANTH 200 in the freshman year will eliminate the requirement for 3 credits of Global and Cultural Awareness in the sophomore year. If ANTH 100 is chosen in the freshman year instead, then 3 credits of Global and Cultural Awareness will be required in the sophomore year, selected from the list of courses in category 3E of the AUCC.

3. Anthropology Humanities courses taken in the freshman and senior years for a total of six credits must include two subject codes, selected from the following: ART, D, CO, E, ETST 430, L***, LB 192 (Arts and Humanities sections only), MU, PHIL, SPCM, TH.

4. Select 7 credits including two subject codes and at least one formal laboratory from the following: AA, BMS, BIO, BZ, CHEM, GEOL, LIFE, MATH, NR, NSCI, PH, SOCR, and STAT.

5. Select a total of 9 credits over the sophomore, junior and senior years as shown, and including at least two subject codes, from the following: ECON, HIST, JTC, POLS, PSY, SOC, LB 192 (social science sections only), ETST (except ETST 430).

6. Capstone topic must focus on geography. ANTH 493 must be taken concurrently with one of the AUCC 4A anthropology courses listed with ANTH 493 in the senior year. Using Competencies (AUCC 4A) must be taken concurrently with ANTH 493. Courses approved for AUCC category 4A taken in the sophomore, junior, or senior year and not concurrently with ANTH 493 and not included in the approved list in the program will not count toward completion of the 4A requirement for this major. Students taking Senior Honors Thesis (HONR 499, 3 credits) are also required to register for ANTH 493 (1 credit).

7. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Electives</th>
<th>Total Credits</th>
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<tbody>
<tr>
<td></td>
<td>X 1B</td>
<td>3</td>
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<tr>
<td></td>
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</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 120</td>
<td>Human Origins and Variation (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ANTH 121</td>
<td>Human Origins and Variation Laboratory (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>1</td>
<td></td>
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<tr>
<td>ANTH 140</td>
<td>Introduction to Prehistory (GT-HI1)</td>
<td>X</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Additional Humanities</td>
<td>(See allowable subject codes on Concentration Requirements Tab)</td>
<td>X</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>AUCC 1B (MATH), CO 150, GR 100 must be completed by the end of Semester 2</td>
<td>X</td>
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</table>

**Total Credits** 16

**Sophomore**

**Semester 3**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Additional Natural Science</td>
<td>(See allowable subject codes on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Additional Social Science</td>
<td>(See allowable subject codes on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
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<td>3</td>
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**Total Credits** 15

**Semester 4**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GR 210/ESS 210</td>
<td>Physical Geography</td>
<td>X</td>
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<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select one course from the following:</td>
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<td></td>
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<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>Additional Natural Science</td>
<td>(See allowable subject codes on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Additional Social Science</td>
<td>(See allowable subject codes on Concentration Requirements Tab)</td>
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</table>

**Total Credits** 16

**Junior**

**Semester 5**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
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<td>3</td>
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<tr>
<td>ANTH 365</td>
<td>Quantifying Anthropology</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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<tr>
<td>STAT 311</td>
<td>Statistics for Behavioral Sciences I</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>GR 320</td>
<td>Cultural Geography</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Select one course from the following:</td>
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<td></td>
<td></td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>GR 420</td>
<td>Spatial Analysis with GIS</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Select one Biological Anthropology course not taken in another category</td>
<td>(See List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
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**Total Credits** 15-16

**Semester 6**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one Archaeology course not taken in another category</td>
<td>(See List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3-8</td>
</tr>
</tbody>
</table>

**Total Credits**
Select one Cultural Anthropology course not taken in another category (See List on Concentration Requirements Tab) 
Electives 

Senior 
Total Credits 15-19

Semester 7 
Critical Recommended AUCC Credits 
ANTH 400 History of Anthropological Thought X 4B 
3 
Additional Humanities (See allowable subject codes on Concentration Requirements Tab) X 
3 
Additional Social Science (See allowable subject codes on Concentration Requirements Tab) 
Electives 

Semester 8 
Total Credits 15 
Critical Recommended AUCC Credits 
ANTH 493 Capstone Seminar X 4C 
1 
AUCC 4A: Select one course not taken elsewhere from the AUCC 4A List on the Concentration Requirements Tab X 4A 
3-4 
Select one Geography Content course (See List on Concentration Requirements Tab) X 
3 
Electives X 
1-7 
The benchmark courses for the 8th semester are the remaining courses in the entire program of study. X 

Total Credits 9-14 

Program Total Credits: 120

Master of Arts in Anthropology

Plan A
The thesis option must consist of a minimum of 30 semester credits of course work concentrated in anthropological areas relevant to the participant’s professional goals. The thesis is the culmination of a research project carried out by the student under the guidance of his or her advisor. A final examination consists of a defense of the thesis, as well as other parts of the program of study.

Plan B
The non-thesis option is intended for students seeking development of an understanding of Anthropology which will allow them to move on to a PhD program in Anthropology, or be incorporated in their work. Plan B students are expected to take a more broadly distributed series of courses and to show less specialization than that which characterizes Plan A programs of study.

Requirements for Plan B are a minimum of 36 credits of study. Students must complete a portfolio of work demonstrating both the breadth of their understanding of Anthropology and their own area of specialization, selected in consultation with the student’s advisor. A final examination consists of a defense of the portfolio, as well as other parts of the program of study.

Effective Spring 2013

Plan A
The thesis option must consist of a minimum of 30 semester credits of course work concentrated in anthropological areas relevant to the participant’s professional goals. The thesis is the culmination of a research project carried out by the student under the guidance of his or her advisor. A final examination consists of a defense of the thesis, as well as other parts of the program of study.

Plan B
The non-thesis option is intended for students seeking development of an understanding of Anthropology which will allow them to move on to a PhD program in Anthropology, or be incorporated in their work. Plan B students are expected to take a more broadly distributed series of courses and to show less specialization than that which characterizes Plan A programs of study.

Requirements for Plan B are a minimum of 36 credits of study. Students must complete a portfolio of work demonstrating both the breadth of their understanding of Anthropology and their own area of specialization, selected in consultation with the student’s advisor. A final examination consists of a defense of the portfolio, as well as other parts of the program of study.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>ANTH 500</td>
<td>Development of Anthropological Theory</td>
<td>3</td>
</tr>
<tr>
<td>GRAD 544</td>
<td>Ethical Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Select one methods course integrated with the student’s program of study in consultation with advisor.</td>
<td>3-4</td>
<td></td>
</tr>
</tbody>
</table>

Select at least three credits in a 500- or 600-level anthropology course outside the student’s subfield of specialization (archaeology, socio-cultural or biological anthropology).
Select at least six credits from departments outside of Anthropology. The courses should be integrated with the student’s program of study.

Total Credits 16-17

- A minimum of 18 hours of regular course work in Anthropology is required. This excludes independent study.
- A maximum of six credits of ANTH 695 will be allowed towards graduation under the Plan A option. A minimum of 3 credits of ANTH 695 is required toward graduation under the Plan B option.
- A maximum of six credits of ANTH 699 will be allowed towards graduation under Plan A. No credits of ANTH 699 will be allowed toward graduation under Plan B.

Master of Arts in Anthropology, Plan A, The Anthropology of Health and Well-Being Specialization

Requirements
Effective Summer 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANT500</td>
<td>Development of Anthropological Theory</td>
<td>3</td>
</tr>
<tr>
<td>GRAD544</td>
<td>Ethical Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Research Methods</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ANTH699</td>
<td>Thesis</td>
<td>5</td>
</tr>
</tbody>
</table>

Health-Focused Courses 2,3

Select a minimum of 12 credits from the following: 12

- ANTH372 Human Osteology
- ANTH423 Cultural Psychiatry
- ANTH444 Cultures of Virtual Worlds—Research Methods
- ANTH445 Psychological Anthropology
- ANTH472 Human Biology
- ANTH520 Women, Health, and Culture
- ANTH540 Medical Anthropology
- ANTH545 Global Mental Health—Theory and Method
- ANTH547 Mind, Medicine, and Culture
- ANTH570 Contemporary Issues-Biological Anthropology
- ANTH571 Anthropology and Global Health
- ANTH572 Human Origins
- ANTH573 Paleoclimate and Human Evolution

Supporting Courses 2,3,4

Select a minimum of 3 credits from the following: 3

- ANTH438 Approaches to Community-Based Development
- ANTH449 Participatory Monitoring and Evaluation
- ANTH515 Culture and Environment
- ANTH521 Gender, Sexuality, and Culture
- ANTH529 Anthropology and Sustainable Development
- ANTH530 Human-Environment Interactions
- ANTH532 The Culture of Disaster
- ANTH535 Globalization and Culture Change
- ANTH546 Culture, Mind, and Cognitive Science
- ANTH679/IE 679 Applications of International Development
- GR420 Spatial Analysis with GIS

Outside Courses 2

Select a minimum of 6 credits from the following: 6

- ERHS520 Environmental and Occupational Health Issues
- ETST510 Ethnicity, Race, and Health Disparities in U.S.
- FSHN508 International Nutrition and World Hunger
- HES556 Wellness and Health Promotion Concepts
- JTC630 Health Communication
- PSY515 Women’s Health
- PSY517/IE 517 Perspectives in Global Health

Total Credits 33

A minimum of 33 credits are required to complete this program.

1. Select one departmentally approved course in methods with approval of advisor and committee.
2. Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.
3. A maximum total of 6 undergraduate credits may be used to fulfill the credits required to complete this specialization under the M.A. Anthropology.
4. Any methods course listed in Core Requirements may be included in Supporting Courses if not taken to fulfill the methods requirement.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.

Master of Arts in Anthropology, Plan B, The Anthropology of Health and Well-Being Specialization

Requirements
Effective Summer 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANT500</td>
<td>Development of Anthropological Theory</td>
<td>3</td>
</tr>
<tr>
<td>GRAD544</td>
<td>Ethical Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Research Methods</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ANTH695</td>
<td>Independent Study</td>
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</tbody>
</table>

Health-Focused Courses 2,3

Select a minimum of 12 credits from the following: 12

- ANTH372 Human Osteology
- ANTH423 Cultural Psychiatry
- ANTH444 Cultures of Virtual Worlds—Research Methods
- ANTH445 Psychological Anthropology
- ANTH472 Human Biology
- ANTH520 Women, Health, and Culture
- ANTH540 Medical Anthropology
- ANTH545 Global Mental Health—Theory and Method
- ANTH547 Mind, Medicine, and Culture
- ANTH570 Contemporary Issues-Biological Anthropology
- ANTH571 Anthropology and Global Health
- ANTH572 Human Origins
- ANTH573 Paleoclimate and Human Evolution
- ANTH532 The Culture of Disaster
- ANTH535 Globalization and Culture Change
- ANTH546 Culture, Mind, and Cognitive Science
- ANTH679/IE 679 Applications of International Development
- GR420 Spatial Analysis with GIS

Outside Courses 2

Select a minimum of 6 credits from the following: 6

- ERHS520 Environmental and Occupational Health Issues
- ETST510 Ethnicity, Race, and Health Disparities in U.S.
- FSHN508 International Nutrition and World Hunger
- HES556 Wellness and Health Promotion Concepts
- JTC630 Health Communication
- PSY515 Women’s Health
- PSY517/IE 517 Perspectives in Global Health

Total Credits 33

A minimum of 33 credits are required to complete this program.

1. Select one departmentally approved course in methods with approval of advisor and committee.
2. Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.
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<tbody>
<tr>
<td>ANTH 444</td>
<td>Cultures of Virtual Worlds--Research Methods</td>
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<tr>
<td>ANTH 445</td>
<td>Psychological Anthropology</td>
<td></td>
</tr>
<tr>
<td>ANTH 472</td>
<td>Human Biology</td>
<td></td>
</tr>
<tr>
<td>ANTH 520</td>
<td>Women, Health, and Culture</td>
<td></td>
</tr>
<tr>
<td>ANTH 540</td>
<td>Medical Anthropology</td>
<td></td>
</tr>
<tr>
<td>ANTH 545</td>
<td>Global Mental Health--Theory and Method</td>
<td></td>
</tr>
<tr>
<td>ANTH 547</td>
<td>Mind, Medicine, and Culture</td>
<td></td>
</tr>
<tr>
<td>ANTH 570</td>
<td>Contemporary Issues-Biological Anthropology</td>
<td></td>
</tr>
<tr>
<td>ANTH 571</td>
<td>Anthropology and Global Health</td>
<td></td>
</tr>
<tr>
<td>ANTH 572</td>
<td>Human Origins</td>
<td></td>
</tr>
<tr>
<td>ANTH 573</td>
<td>Paleoclimate and Human Evolution</td>
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</tbody>
</table>

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<td>ANTH 438</td>
<td>Approaches to Community-Based Development</td>
<td></td>
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<td></td>
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<tr>
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<td>Gender, Sexuality, and Culture</td>
<td></td>
</tr>
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<td>Anthropology and Sustainable Development</td>
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</tr>
<tr>
<td>ANTH 530</td>
<td>Human-Environment Interactions</td>
<td></td>
</tr>
<tr>
<td>ANTH 532</td>
<td>The Culture of Disaster</td>
<td></td>
</tr>
<tr>
<td>ANTH 535</td>
<td>Globalization and Culture Change</td>
<td></td>
</tr>
<tr>
<td>ANTH 546</td>
<td>Culture, Mind, and Cognitive Science</td>
<td></td>
</tr>
<tr>
<td>ANTH 679/IE 679</td>
<td>Applications of International Development</td>
<td></td>
</tr>
<tr>
<td>GR 420</td>
<td>Spatial Analysis with GIS</td>
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Select a minimum of 9 credits from the following:

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<tr>
<td>ERHS 520</td>
<td>Environmental and Occupational Health Issues</td>
<td></td>
</tr>
<tr>
<td>ETST 510</td>
<td>Ethnicity, Race, and Health Disparities in U.S.</td>
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<tr>
<td>FSHN 508</td>
<td>International Nutrition and World Hunger</td>
<td></td>
</tr>
<tr>
<td>HES 556</td>
<td>Wellness and Health Promotion Concepts</td>
<td></td>
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<tr>
<td>JTC 630</td>
<td>Health Communication</td>
<td></td>
</tr>
<tr>
<td>PSY 515</td>
<td>Women’s Health</td>
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<tr>
<td>PSY 517/IE 517</td>
<td>Perspectives in Global Health</td>
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**Total Credits**: 36

A minimum of 36 credits are required to complete this program.

1. Select one course in methods from department list with approval of advisor and committee.
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### Master of Arts in Anthropology, Plan A, Humans and the Environment Specialization

#### Requirements

**Effective Summer 2013**

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<tr>
<td>GRAD 544</td>
<td>Ethical Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Research Methods</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ANTH 699</td>
<td>Thesis</td>
<td>5</td>
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</tbody>
</table>

**Humans and the Environment Focused Courses**

Select a minimum of 12 credits from the following:

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<td>Hunter-Gatherer Ecology</td>
<td></td>
</tr>
<tr>
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<td>Impacts on Ancient Environments</td>
<td></td>
</tr>
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<td>ANTH 529</td>
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<td></td>
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<td>ANTH 530</td>
<td>Human-Environment Interactions</td>
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<tr>
<td>ANTH 532</td>
<td>The Culture of Disaster</td>
<td></td>
</tr>
<tr>
<td>ANTH 554/NR 554</td>
<td>Ecological and Social Agent-based Modeling</td>
<td></td>
</tr>
<tr>
<td>ANTH 573</td>
<td>Paleoclimate and Human Evolution</td>
<td></td>
</tr>
<tr>
<td>GR 410</td>
<td>Climate Change: Science, Policy, Implications</td>
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**Supporting Courses**

Select a minimum of 3 credits from the following:

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<tbody>
<tr>
<td>ANTH 359</td>
<td>Colorado Prehistory</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 414/ETST 414</td>
<td>Development in Indian Country</td>
<td></td>
</tr>
<tr>
<td>ANTH 455</td>
<td>Great Plains Archaeology</td>
<td></td>
</tr>
<tr>
<td>ANTH 472</td>
<td>Human Biology</td>
<td></td>
</tr>
<tr>
<td>ANTH 478/HIST 478</td>
<td>Heritage Resource Management</td>
<td></td>
</tr>
<tr>
<td>ANTH 528</td>
<td>Economic Anthropology</td>
<td></td>
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<tr>
<td>ANTH 572</td>
<td>Human Origins</td>
<td></td>
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<tr>
<td>ANTH 679/IE 679</td>
<td>Applications of International Development</td>
<td></td>
</tr>
<tr>
<td>GR 420</td>
<td>Spatial Analysis with GIS</td>
<td></td>
</tr>
<tr>
<td>GR 503</td>
<td>Remote Sensing and Image Analysis</td>
<td></td>
</tr>
<tr>
<td>NR 503</td>
<td>Action for Sustainable Behavior</td>
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<tbody>
<tr>
<td>ECOL 592</td>
<td>Interdisciplinary Seminar in Ecology</td>
<td></td>
</tr>
<tr>
<td>NR 535</td>
<td>Action for Sustainable Behavior</td>
<td></td>
</tr>
</tbody>
</table>
A minimum of 33 credits are required to complete this program.

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**Master of Arts in Anthropology, Plan B, Humans and the Environment Specialization**

**Requirements**

**Effective Summer 2013**

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<td>ANTH 695</td>
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ANTH 472 | Human Biology                         |         |
| ANTH 478/ HIST 478 | Heritage Resource Management       |         |
| ANTH 528 | Economic Anthropology                 |         |
| ANTH 572 | Human Origins                         |         |
| ANTH 679/ IE 679 | Applications of International Development | |
| GR 420 | Spatial Analysis with GIS              |         |
| GR 503/ NR 503 | Remote Sensing and Image Analysis    |         |

**Total Credits**

36

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**Master of Arts in Anthropology, Plan A, International Development Specialization**

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**Technical Sciences**

Select a minimum of 9 credits: either all from one group, or one each from 3 groups, or a combination of courses totaling a minimum of 9 credits with committee approval. Courses must be outside of social sciences.

Group A. Water Resources:
<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CIVE 516</td>
<td>Water Control and Measurement</td>
</tr>
<tr>
<td>CIVE 522</td>
<td>Engineering Hydrology</td>
</tr>
<tr>
<td>CIVE 539</td>
<td>Water and Wastewater Analysis</td>
</tr>
<tr>
<td>CIVE 544</td>
<td>Water Resources Planning and Management</td>
</tr>
<tr>
<td>CIVE 578</td>
<td>Infrastructure and Utility Management</td>
</tr>
<tr>
<td>CIVE 622</td>
<td>Risk Analysis of Water/Environmental Systems</td>
</tr>
<tr>
<td>SOC 639</td>
<td>Technology Assessment and Social Forecasting</td>
</tr>
<tr>
<td>WR 510</td>
<td>Watershed Management in Developing Countries</td>
</tr>
</tbody>
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**Group B. Environmental/Water Quality:**
- BSPM 508 | Environmental Fate of Pesticides
- CIVE 438 | Environmental Engineering Concepts
- CIVE 522 | Engineering Hydrology
- CIVE 547 | Statistics for Environmental Monitoring
- STAT 547 |
- SOC 639 | Technology Assessment and Social Forecasting

**FW 544** | Ecotoxicology

**Group C. Agricultural Development:**
- ANEQ 448 | Livestock Manure Management and Environment
- AREC 415 | International Agricultural Trade
- AREC 572 | Social Benefit Cost Analysis
- AREC 660 | Development of Rural Resource-Based Economies
- AREC 678 | Agricultural and Resource Policy
- BSPM 462 | Parasitology and Vector Biology
- BZ 462 |
- MIP 462 | Rangeland Planning and Grazing Management
- RS 471 | World Grassland Ecogeography
- RS 531 |

**Group D. Appropriate Technology:**
- CM 666/PHIL 666 | Science and Ethics
- HIST 463 | Science and Technology in Modern History
- HORT 466 | Urban and Community Forestry
- NR 515 | Natural Resources Policy and Biodiversity
- GR 420 | Spatial Analysis with GIS
- GR 503/NR 503 | Remote Sensing and Image Analysis
- LAND 520 | Geographic Information Systems

**Social Sciences**

Select a minimum of 6 credits: either all courses from one group, or one each from 2 groups, totaling a minimum of 6 credits with committee approval.

**Group A. Cultures, Institutions, and Globalization:**
- ANTH 413 | Indigenous Peoples Today
- ANTH 422/SOC 422 | Comparative Legal Systems
- ANTH 438 | Approaches to Community-Based Development
- ANTH 439 | Community Mobilization
- ANTH 447 | Gender Equity in Development
- ANTH 448 | Development and Empowerment
- ANTH 449 | Participatory Monitoring and Evaluation
- ANTH 521 | Gender, Sexuality, and Culture
- ANTH 529 | Anthropology and Sustainable Development
- ANTH 532 | The Culture of Disaster
- ANTH 535 | Globalization and Culture Change
- ANTH 539 | Anthropology of Modernity
- AREC 566/SOC 566 | Contemporary Issues in Developing Countries
- GR 320 | Cultural Geography
- HIST 350 | United States Foreign Relations Since 1914
- IE 450/SOWK 450 | International Social Welfare and Development
- IE 470 | Women and Development
- IE 472 | Education for Global Peace
- IE 550/PHIL 550 | Ethics and International Development
- JTC 412 | International Mass Communication
- POLS 431 | International Law
- POLS 433 | International Organization
- POLS 541 | Political Economy of Change and Development
- SOC 661 | Gender and Global Society
- SOC 666 | Globalization and Socioeconomic Restructuring
- SOC 669 | Global Inequality and Change
- SOWK 342 | Generalist Practice-Organizations/Communities
- SOWK 611 | Generalist Practice-Large Client Systems
- SOWK 631 | Advanced Practice with Communities
- ANTH 414/ETST 414 | Development in Indian Country
- ANTH 528 | Economic Anthropology
- ANTH 551 | Historical Archaeology
- ECON 440 | Economics of International Trade and Policy
- ECON 442 | Economics of International Finance and Policy
- ECON 460 | Economic Development
- ECON 515 | Financial Institutions-Structure/Regulation
- ECON 640 | International Trade Theory
- FIN 475 | International Business Theory
- MGT 475 | International Business Management
- SOC 663 | Sociology of Sustainable Development
- ANTH 423 | Cultural Psychiatry
ANTH 472  Human Biology
ANTH 520  Women, Health, and Culture
ANTH 532  The Culture of Disaster
ANTH 540  Medical Anthropology
ANTH 545  Global Mental Health--Theory and Method
ANTH 547  Mind, Medicine, and Culture
ANTH 570  Contemporary Issues-Biological Anthropology
ANTH 571  Anthropology and Global Health
ERHS 430  Human Disease and the Environment
FShN 508  International Nutrition and World Hunger
FShN 661  International Nutrition
IE 471  Children and Youth in Global Context
IE 517/ PSY 517  Perspectives in Global Health

Group D. Conservation and Resource Management:
ANTH 415  Indigenous Ecologies and the Modern World
ANTH 450  Hunter-Gatherer Ecology
ANTH 478/ HIST 478  Heritage Resource Management

ANTH 515  Culture and Environment
ANTH 530  Human-Environment Interactions
AREC 540/ ECON 540  Environmental and Natural Resource Economics
AREC 541/ ECON 541  Environmental Economics
AREC 542  Applied Advanced Water Resource Economics
NRRT 442  Tourism Planning
NRRT 470  Tourism Impacts
NRRT 550  Ecotourism
POLS 670  Politics of Environment and Sustainability
SOC 461  Water, Society, and Environment

Area Studies
Select a minimum of 3 credits from the following:

  ANTH 310  Peoples and Cultures of Africa
  ANTH 312  Modern Indian Culture and Society
  ANTH 314  Southeast Asian Cultures and Societies
  ANTH 319  Latin American Peasantries
  ANTH 411  Indians of South America
  ANTH 412  Indians of North America
  ANTH 446  New Orleans and the Caribbean
  ANTH 451  Andean Archaeology and Ethnohistory
  HIST 414  Revolutions in Latin America
  HIST 422  Modern Africa
  HIST 423  South African History
  HIST 530  Reading Seminar: Africa
  HIST 531  Reading Seminar: Latin America
  HIST 532  Reading Seminar: Middle East
  HIST 533  Reading Seminar: East Asia
  HIST 534  Reading Seminar: South Asia

L***  Any upper division (300- to 400-level) or graduate language course
PHIL 455  Islamic Philosophy
POLS 444  Comparative African Politics
POLS 445  Comparative Asian Politics
POLS 446  Politics of South America
POLS 447  Politics in Mexico, Central America, Caribbean

Total Credits 33

A minimum of 33 credits are required to complete this program.

1 Select one course in methods from department list with approval of advisor and committee.
2 At least one course within the Social Sciences group and/or the Area Studies group must be ANTH.
3 Select any upper division (300-level or above) or graduate level language course in consultation with advisor and committee.

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Master of Arts in Anthropology, Plan B, International Development Specialization

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<td>3</td>
</tr>
<tr>
<td>GRAD 544</td>
<td>Ethical Conduct of Research</td>
<td>1</td>
</tr>
<tr>
<td>Methods</td>
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Technical Sciences
Select a minimum of 9 credits: all from one group, one each from 3 groups, or a combination, with committee approval.

Group A. Water Resources:
CIVE 516  Water Control and Measurement
CIVE 522  Engineering Hydrology
CIVE 544  Water Resources Planning and Management
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CIVE 622  Risk Analysis of Water/Environmental Systems
SOC 639  Technology Assessment and Social Forecasting
WR 510  Watershed Management in Developing Countries

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Group A. Cultures, Institutions, and Globalization:

ANTH 413 Indigenous Peoples Today
ANTH 422/ SOC 422 Comparative Legal Systems
ANTH 438 Approaches to Community-Based Development
ANTH 439 Community Mobilization
ANTH 447 Gender Equity in Development
ANTH 448 Development and Empowerment
ANTH 449 Participatory Monitoring and Evaluation
ANTH 521 Gender, Sexuality, and Culture
ANTH 529 Anthropology and Sustainable Development
ANTH 532 The Culture of Disaster
ANTH 535 Globalization and Culture Change

ANTH 539 Anthropology of Modernity
AREC 566/ SOC 566 Countries
GR 320 Cultural Geography
HIST 350 United States Foreign Relations Since 1914
IE 450/ SOWK 450 Development
IE 470 Women and Development
IE 550/ PHIL 550 Ethics and International Development
JTC 412 International Mass Communication
POLS 431 International Law
POLS 433 International Organization
POLS 541 Political Economy of Change and Development
SOC 661 Gender and Global Society
SOC 666 Globalization and Socioeconomic Restructuring
SOC 669 Global Inequality and Change
SOWK 342 Generalist Practice-Organizations/Communities
SOWK 611 Generalist Practice-Large Client Systems
SOWK 631 Advanced Practice with Communities

Group B. Credit, Economy, and Development:

ANTH 414/ ETST 414 Development in Indian Country
ANTH 528 Economic Anthropology
ANTH 551 Historical Archaeology
ECON 440 Economics of International Trade and Policy
ECON 442 Economics of International Finance and Policy
ECON 460 Economic Development
ECON 515 Financial Institutions-Structure/Regulation
ECON 640 International Trade Theory
FIN 475 International Business Finance
MGT 475 International Business Management
SOC 663 Sociology of Sustainable Development

Group C. Health, Culture, and Development:

ANTH 423 Cultural Psychiatry
ANTH 472 Human Biology
ANTH 520 Women, Health, and Culture
ANTH 532 The Culture of Disaster
ANTH 540 Medical Anthropology
ANTH 545 Global Mental Health–Theory and Method
ANTH 547 Mind, Medicine, and Culture
ANTH 570 Contemporary Issues-Biological Anthropology
ANTH 571 Anthropology and Global Health
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NRRT 442  Tourism Planning
NRRT 470  Tourism Impacts
NRRT 550  Ecotourism
POLS 670  Politics of Environment and Sustainability
SOC 461  Water, Society, and Environment

Area Studies 4,5
Select a minimum of 6 credits from the following: 6
- ANTH 310  Peoples and Cultures of Africa
- ANTH 312  Modern Indian Culture and Society
- ANTH 314  Southeast Asian Cultures and Societies
- ANTH 319  Latin American Peasant
- ANTH 411  Indians of South America
- ANTH 412  Indians of North America
- ANTH 446  New Orleans and the Caribbean
- ANTH 451  Andean Archaeology and Ethnohistory
- HIST 414  Revolutions in Latin America
- HIST 422  Modern Africa
- HIST 423  South African History
- HIST 530  Reading Seminar: Africa
- HIST 531  Reading Seminar: Latin America
- HIST 532  Reading Seminar: Middle East
- HIST 533  Reading Seminar: East Asia
- HIST 534  Reading Seminar: South Asia
- L***  Any upper division (300- to 400-level) language course 6
- PHIL 455  Islamic Philosophy
- POLS 444  Comparative African Politics
- POLS 445  Comparative Asian Politics
- POLS 446  Politics of South America
- POLS 447  Politics in Mexico, Central America, Caribbean

Total Credits 36

A minimum of 36 credits are required to complete this program.

1 Two credits of independent study are intended to prepare for formal professional presentation of the student’s development portfolio at a culmination event in the student’s last semester.

2 Select from departmental list.
3 This course is taught by correspondence only.
4 At least two courses within Social Sciences and/or Area Studies must be ANTH.
5 Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. See department list for most up-to-date course list.
6 Select any upper division (300-level or above) or graduate level language course in consultation with advisor and committee.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.

Master of Arts in Anthropology, Plan A, Professional Methods and Techniques Specialization

Effective Fall 2012

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 500</td>
<td>Development of Anthropological Theory</td>
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<tr>
<td>GRAD 544</td>
<td>Ethical Conduct of Research</td>
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<tr>
<td>ANTH 699</td>
<td>Thesis</td>
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</tbody>
</table>

Methods-Focused Courses 1,2
Select a minimum of 12 credits from the following: 12

- ANTH 372  Human Osteology
- ANTH 441  Method in Cultural Anthropology
- ANTH 442  Ethnographic Field School
- ANTH 444  Cultures of Virtual Worlds--Research Methods
- ANTH 449  Participatory Monitoring and Evaluation
- ANTH 456  Archaeology and the Public
- ANTH 457  Lithic Technology
- ANTH 460  Field Class in Archaeology
- ANTH 465  Zooarchaeology
- ANTH 472  Human Biology
- ANTH 475  Methods of Analysis in Paleoanthropology
- ANTH 478/HIST 478  Heritage Resource Management
- ANTH 541  Seminar in Archaeological Method
- ANTH 544  From Death to Discovery
- ANTH 545  Global Mental Health--Theory and Method
- ANTH 547  Mind, Medicine, and Culture
- ANTH 551  Historical Archaeology
- ANTH 554/NR 554  Ecological and Social Agent-based Modeling
- ANTH 573  Paleoclimate and Human Evolution
- ANTH 643  Advanced Ethnographic Field Methods
- ANTH 660  Field Archaeology
- ANTH 686  Practicum-Field Archaeology

2 Select from departmental list.
3 This course is taught by correspondence only.
4 At least two courses within Social Sciences and/or Area Studies must be ANTH.
5 Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. See department list for most up-to-date course list.
6 Select any upper division (300-level or above) or graduate level language course in consultation with advisor and committee.
Master of Arts in Anthropology, Plan B, Professional Methods and Techniques Specialization

Requirements

Effective Fall 2012

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<td><strong>Core Requirements</strong></td>
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<td>ANTH 695</td>
<td>Independent Study</td>
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<td><strong>Methods-Focused Courses</strong></td>
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<tr>
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<td>GR 420</td>
<td>Spatial Analysis with GIS</td>
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<td>GR 503/</td>
<td>Remote Sensing and Image Analysis</td>
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</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1 Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.

2 A maximum total of 6 undergraduate credits may be used to fulfill the requirements of this specialization under the M.A. Anthropology.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.
Minor in Anthropology

ANTH 446  New Orleans and the Caribbean
ANTH 515  Culture and Environment
ANTH 546  Culture, Mind, and Cognitive Science

Outside Courses ¹
Select a minimum of 9 credits from the following: ²

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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>HIST 501</td>
<td>Historical Method: Historiography</td>
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<td>HIST 502</td>
<td>Historical Method: Archives</td>
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<td>HIST 503</td>
<td>Historical Method: Preservation</td>
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<td>HIST 504</td>
<td>Historical Method: Museums</td>
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<td>JTC 471</td>
<td>Research for Public Communicators</td>
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<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
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<tr>
<td>POLS 621</td>
<td>Qualitative Methods in Political Science</td>
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<tr>
<td>POLS 625</td>
<td>Quantitative Methods of Political Research</td>
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<td>SOC 610</td>
<td>Seminar in Methods of Qualitative Analysis</td>
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<td>SOC 612</td>
<td>Seminar in Methods of Evaluational Research</td>
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<tr>
<td>SPCM 638</td>
<td>Communication Research Methods</td>
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</tbody>
</table>

Total Credits 36

A minimum of 36 credits are required to complete this program.

¹ Courses listed here constitute a partial list. Other courses may be used with approval of advisor and committee. Select courses with approval of advisor and committee.

² A maximum total of 6 credits may be used to fulfill the requirements of this specialization under the M.A. Anthropology.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.

Minor in Anthropology

Anthropology focuses on a cross-cultural view of humanity, and broadly conceived dimensions of human behavior. Description and explanation of human activities in other societies provide a sense of perspective for individuals operating within their own culture. A minor may be focused on one or more of the sub-disciplinary divisions such as biology, archaeology, cultural anthropology, or applied anthropology; or it may be distributed across the fields like the major requirements.

Requirements

Effective Fall 2001

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Minor in Geography

The minor in Geography examines the critical interactions among space, place, people and the built and natural environment to interpret the spatial and temporal distribution of features and processes, applying spatial techniques and information technologies such as Geographic Information Systems (GIS) and remote sensing.

Requirements

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.
Select enough credits from the following courses to bring program total to a minimum of 21 credits. At least 8-9 of the credits selected here must be GR and/or ANTH courses:

- ANTH 330 Human Ecology
- ANTH 479/IE 479 International Development Theory and Practice
- ESS 210/GR 210 Physical Geography
- GEOL 454 Geomorphology
- GES 192 Global Environmental Sustainability Seminar
- GES 470 Applications of Environmental Sustainability
- GR 304/WR 304 Sustainable Watersheds
- GR 323/GR 322 Remote Sensing and Image Interpretation
- GR 330 Urban Geography
- GR 345 Geography of Hazards
- GR 410 Climate Change: Science, Policy, Implications
- GR 415 The Geography of Commodities
- GR 420 Spatial Analysis with GIS
- HIST 355 American Environmental History
- INST 300 Approaches to International Studies
- NR 322 Introduction to Geographic Information Systems
- SOC 320 Population-Natural Resources and Environment
- SOC 460 Society and Environment

Total Credits: 21

1 Credit for the techniques course requirement may not double count toward the minor.
2 Credit is not allowed for both GR 420 and NR 322.

CSU features a well-rounded curriculum integrating breadth of experience with depth of knowledge. Students develop both creative and critical thinking skills as they experiment with contemporary and traditional art making processes in a very active studio environment. In addition to essential liberal arts coursework, Art majors will be enrolled in studio and/or Art History classes every semester as they progress through their program of study. On-site advisors are available to help students navigate the many options offered by the Department of Art and Art History.

Undergraduate Majors

- Major in Art, B.F.A.
  - Drawing Concentration
  - Electronic Art Concentration
  - Fibers Concentration
  - Graphic Design Concentration
  - Metallurgy Concentration
  - Painting Concentration
  - Photo Image Making Concentration
  - Pottery Concentration
  - Printmaking Concentration
  - Sculpture Concentration

- Major in Art, B.A.
  - Art Education Concentration
  - Art History Concentration
  - Studio Concentration

Graduate Programs in Art

The Art Department offers a Master of Fine Arts degree program with specializations in drawing, fibers, graphic design, metalsmithing and jewelry, painting, printmaking, and sculpture. The program requires 60 credits in two full-time academic years. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the department’s website (http://art.colostate.edu).

Master Program

- Master of Fine Arts (M.F.A.)

Courses

Art and Art History (ART)

ART 100 Introduction to the Visual Arts (GT-AH1) Credits: 3 (3-0-0)
Course Description: Exploration of the development of visual arts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).
ART 105 Issues and Practices in Art  Credit: 1 (1-0-0)
Course Description: Current issues, practices, and resources in the visual arts; integration of unified vocabulary in various art disciplines.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 110 Art History I  Credits: 3 (3-0-0)
Course Description: The arts of ancient cultures and civilizations.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 111 Art History II  Credits: 3 (3-0-0)
Course Description: Medieval through early modern art history.
Prerequisite: ART 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 135 Introduction to Drawing  Credits: 3 (0-6-0)
Course Description: Elements of artistic freehand drawing emphasizing experimentation with wide variety of media.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 136 Introduction to Figure Drawing  Credits: 3 (0-6-0)
Course Description: Human form as basis for self-expression through various drawing media.
Prerequisite: ART 135.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 160 Two-Dimensional Visual Fundamentals  Credits: 3 (0-6-0)
Course Description: Concepts of organization and color theory structure for understanding and manipulation of two-dimensional space.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 170 Three-Dimensional Visual Fundamentals  Credits: 3 (0-6-0)
Course Description: Understanding and manipulating three-dimensional form and space; use of materials and tools.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 212 Art History III  Credits: 3 (3-0-0)
Course Description: Modern to contemporary art history.
Prerequisite: ART 111.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 220 Drawing  Credits: 3 (0-6-0)
Course Description: Basic freehand drawing emphasizing elements of formal organization.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 230 Photo Image Making  Credits: 3 (0-6-0)
Course Description: Photographic imagery as an art medium; exploration of silver-based (film) materials.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 235 Intermediate Drawing  Credits: 3 (0-6-0)
Course Description: Drawing using models and various still life material.
Prerequisite: ART 135.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 240 Pottery  Credits: 3 (0-6-0)
Course Description: Basic techniques of studio ceramics and wheel throwing; exploration of expressive potential in pottery.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 245 Metalsmithing and Jewelry  Credits: 3 (0-6-0)
Course Description: Basic metal techniques; forming and construction; surface treatment and finishing processes; behavior and mechanical properties of metals.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 250 Fibers  Credits: 3 (0-6-0)
Course Description: Fibers and fabric as expressive media; weaving and basic fiber structures; fabric painting and surface techniques.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 255 Introduction to Graphic Design  Credits: 3 (0-6-0)
Course Description: Problems emphasizing typography, layout, symbols, illustration, and package design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Registration Information: 2.55 GPA or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 256 Introduction to Electronic Art  Credits: 3 (0-6-0)
Course Description: Introduction to digital media and internet-based design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 260 Painting  Credits: 3 (0-6-0)
Course Description: Basic oil painting procedures, techniques, and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
ART 265 Printmaking I-Intaglio and Relief Credits: 3 (0-6-0)
Course Description: Problems in composition utilizing basic techniques and principles of printmaking processes.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 270 Sculpture I Credits: 3 (0-6-0)
Course Description: Introduction to sculptural techniques and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 295A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 295D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 295F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 310 History of American Art to 1945 Credits: 3 (3-0-0)
Course Description: American art from 17th century to 1945.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 311 Art of Africa Credits: 3 (3-0-0)
Course Description: History of the art of Africa.
Prerequisite: ART 212.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 312 History of Pre-Columbian Art Credits: 3 (3-0-0)
Course Description: History of the art of Central and South America.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 314 Women in Art History Credits: 3 (3-0-0)
Course Description: Women as artists in history of art and women's media in art.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 315 United States Art 1945-1980 Credits: 3 (3-0-0)
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ART 316 Art of the Pacific  Credits: 3 (3-0-0)  
Course Description: Arts of Australia, Indonesia, Melanesia, Micronesia, and Polynesia.  
Prerequisite: ART 212.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ART 317 Native North American Art  Credits: 3 (3-0-0)  
Course Description: Introduction to historic and contemporary art forms of Native North America, emphasizing the cultural and political contexts.  
Prerequisite: ART 212.  
Registration Information: Written consent of instructor for non-Art majors.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ART 321A Travel Abroad: Studio Workshop in Italy-Drawing  Credits: Var[3-5] (0-0-0)  
Course Description: Exploration of studio techniques in Italy.  
Prerequisite: ART 135.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

ART 321B Travel Abroad: Studio Workshop in Italy-Photo Image Making  Credits: Var[3-5] (0-0-0)  
Course Description: Exploration of studio techniques in Italy.  
Prerequisite: ART 230 or portfolio review.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

ART 321C Travel Abroad: Studio Workshop in Italy-Fibers  Credits: Var[3-5] (0-0-0)  
Course Description: Exploration of studio techniques in Italy.  
Prerequisite: ART 250 or portfolio review; written consent of instructor.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

ART 321D Travel Abroad: Studio Workshop in Italy-Sculpture  Credits: Var[3-5] (0-0-0)  
Course Description: Exploration of studio techniques in Italy.  
Prerequisite: ART 270.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

ART 325 Concepts in Art Education  Credits: 3 (3-0-0)  
Course Description: Artistic learning in children, adolescents, adults, and special populations.  
Prerequisite: EDUC 275.  
Registration Information: Admission to Teacher Licensure Program required.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

ART 326 Art Education Studio  Credits: 4 (0-8-0)  
Course Description: Art areas required for teacher licensure as indicated by individual student needs.  
Prerequisite: None.  
Registration Information: Junior or senior standing; admission to Teacher Licensure Program required.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ART 330 Photo Image Making II  Credits: 4 (0-8-0)  
Course Description: Studio course designed to develop the growth of photographic expression.  
Prerequisite: ART 230.  
Registration Information: ART 230 or portfolio review.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ART 331 Photo Image Making III  Credits: 4 (0-8-0)  
Course Description: Studio course designed to further growth of concept, materials in photographic expression as an art medium.  
Prerequisite: ART 330.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ART 333 Intermediate Drawing II  Credits: 4 (0-8-0)  
Course Description: Assigned and independent drawing projects; use of traditional and non-traditional materials.  
Prerequisite: ART 235.  
Registration Information: May be taken 3 times for credit.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ART 334 Intermediate Drawing III  Credits: 4 (0-8-0)  
Course Description: Assigned and independent drawing projects; art theory and criticism; readings and written assignments.  
Prerequisite: ART 335.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ART 340 Pottery II  Credits: 4 (0-8-0)  
Course Description: Studio ceramic and wheel throwing techniques; surface treatment, kiln firing, clay and glaze formulation.  
Prerequisite: ART 240.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

ART 341 Pottery III  Credits: 4 (0-8-0)  
Course Description: Form and surface exploration; supportive ceramic technologies; expression in historical pottery.  
Prerequisite: ART 340.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.
ART 345  Metalsmithing and Jewelry II  Credits: 4 (0-8-0)
Course Description: Raising and casting techniques in combination with construction; metal spinning.
Prerequisite: ART 245.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 346  Metalsmithing and Jewelry III  Credits: 4 (0-8-0)
Course Description: Forging and enameling techniques on nonferrous and ferrous metals; stone setting.
Prerequisite: ART 245.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 350  Fibers II  Credits: 4 (0-8-0)
Course Description: Intermediate fiber structures and fabric and surface design; dyes and pigments; continued investigation of fibers and fabric as expressive media.
Prerequisite: ART 250.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 351  Fibers III  Credits: 4 (0-8-0)
Course Description: Investigation of fibers and fabric as expressive media; research in historic textiles.
Prerequisite: ART 250.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 355  Typography and Design Systems  Credits: 4 (0-8-0)
Course Description: Emphasis on typographic solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 255.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 356  Illustration  Credits: 4 (0-8-0)
Course Description: Problems emphasizing media, experimental techniques, and compositions.
Prerequisite: ART 255.
Registration Information: Six credits in drawing required in addition to ART 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 357  Interactive Media  Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 358  Experimental Video  Credits: 4 (0-8-0)
Course Description: History, theory, application of experimental video and digital special effects, animation and video techniques as they apply to experimental video.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 360  Painting Methods and Materials  Credits: 4 (0-8-0)
Course Description: Experimentation with the painting process in relationship to method, material and tools.
Prerequisite: ART 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 361  Figure Painting  Credits: 4 (0-8-0)
Course Description: Composition and techniques in oil and/or acrylic emphasizing the human figure.
Prerequisite: ART 235 and ART 260.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 365  Printmaking II-Lithography  Credits: 4 (0-8-0)
Course Description: Preparation, processing, and printing techniques in stone and metal plate lithography.
Prerequisite: ART 136.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 366  Printmaking III-Studio Workshop  Credits: 4 (0-8-0)
Course Description: Advanced intaglio, relief, planographic, and stencil processes in the workshop, continued emphasis on individual creative growth.
Prerequisite: ART 365.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 370  Sculpture II  Credits: 4 (0-8-0)
Course Description: Intermediate-level exploration of materials, concepts, process, and outcomes rooted in the sculpture area.
Prerequisite: ART 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 371  Sculpture III  Credits: 4 (0-8-0)
Course Description: Intermediate-level development of studio practice, exploration of technical process, theory and professionalism.
Prerequisite: ART 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
ART 415 History of 19th Century European Art Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1880 to 1945.
Prerequisite: ART 122.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 414 History of Baroque and Rococo Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and other arts in Europe, 1660 to 1780.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 413 History of 18th Century European Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and other arts in Europe, 1780 to 1900.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 412 History of Renaissance Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and minor arts, 1300 to 1600.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 411 History of Medieval Art Credits: 3 (3-0-0)
Course Description: Early Christian, Byzantine, Islamic, Romanesque, and Gothic visual art forms.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 410 Greek Art Credits: 3 (3-0-0)
Course Description: Aegean and Greek architecture, painting, and sculpture.
Prerequisite: ART 212.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 392 Undergraduate Professional Practices Seminar Credits: 3 (0-0-3)
Course Description: Skills and tools beneficial in pursuing professional and/or academic goals in the visual arts.
Prerequisite: None.
Registration Information: In addition to ART 212, the following are required: 6 credits from ART 135, ART 136, ART 160, ART 170; 30 credits.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 419 Historiography and Methodology of Art History Credits: 3 (3-0-0)
Course Description: Historiography/methodology/research methods in art history.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 418 Contemporary Artists and Art Critics Credits: 3 (3-0-0)
Course Description: Critical study of contemporary artists and art criticism.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 417 Roman Art Credits: 3 (3-0-0)
Course Description: Roman sculpture, painting, and architecture.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 416 History of European Art, 1900 to 1945 Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1900 to 1945.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 415 History of 19th Century European Art Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1880 to 1945.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 414 History of Baroque and Rococo Art Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1660 to 1780.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 413 History of 18th Century European Art Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1780 to 1900.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 412 History of Renaissance Art Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1300 to 1600.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 411 History of Medieval Art Credits: 3 (3-0-0)
Course Description: Early Christian, Byzantine, Islamic, Romanesque, and Gothic visual art forms.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 410 Greek Art Credits: 3 (3-0-0)
Course Description: Aegean and Greek architecture, painting, and sculpture.
Prerequisite: ART 212.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 392 Undergraduate Professional Practices Seminar Credits: 3 (0-0-3)
Course Description: Skills and tools beneficial in pursuing professional and/or academic goals in the visual arts.
Prerequisite: None.
Registration Information: In addition to ART 212, the following are required: 6 credits from ART 135, ART 136, ART 160, ART 170; 30 credits.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 419 Historiography and Methodology of Art History Credits: 3 (3-0-0)
Course Description: Historiography/methodology/research methods in art history.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 418 Contemporary Artists and Art Critics Credits: 3 (3-0-0)
Course Description: Critical study of contemporary artists and art criticism.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 417 Roman Art Credits: 3 (3-0-0)
Course Description: Roman sculpture, painting, and architecture.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 416 History of European Art, 1900 to 1945 Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1900 to 1945.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ART 440 Pottery IV Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression; supportive technology; expression in contemporary American pottery.
Prerequisite: ART 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 441 Pottery V Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression of personal subject matter; supportive technology.
Prerequisite: ART 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 445 Metalsmithing and Jewelry IV Credits: 4 (0-8-0)
Course Description: Chasing and repousse techniques in two- and three-dimension; inlay, engraving, and etching techniques.
Prerequisite: ART 345 and ART 346.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 446 Metalsmithing and Jewelry V Credits: 4 (0-8-0)
Course Description: Advanced techniques: granulation, electroforming, photoetching, makume, niello, ferrous metals techniques.
Prerequisite: ART 345 and ART 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 447 Advanced Typography and Design Systems Credits: 4 (0-8-0)
Course Description: Two- and three-dimensional solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 355.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 448 Advanced Experimental Video Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: (ART 255 or ART 256) and (ART 357).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 449 Advanced Illustration Credits: 4 (0-8-0)
Course Description: Projects in editorial and reportorial illustration emphasizing techniques applied to solving problems in advanced composition.
Prerequisite: ART 356.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 450 Advanced Painting I Credits: 4 (0-8-0)
Course Description: Advanced composition and exploration of individual creative expression.
Prerequisite: ART 360 and ART 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 451 Advanced Painting II Credits: 4 (0-8-0)
Course Description: Continuation in direction of individual creative expression.
Prerequisite: ART 460.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 452 Advanced Painting III Credits: 4 (0-8-0)
Course Description: Continued emphasis on individual creative expression.
Prerequisite: ART 461.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 453 Advanced Painting IV Credits: 4 (0-8-0)
Course Description: Advanced studio problems in expressive use of fibers and fabric.
Prerequisite: ART 350 and ART 351.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 454 Advanced Typography and Design Systems Credits: 4 (0-8-0)
Course Description: Advanced printmaking concepts in studio and research problems.
Prerequisite: ART 465.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
ART 470 Sculpture IV Credits: 4 (0-8-0)
Course Description: Development of individual expression using sculptural techniques.
Prerequisite: ART 370 and ART 371.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 471 Sculpture V Credits: 4 (0-8-0)
Course Description: Advanced expression using sculptural techniques.
Prerequisite: ART 470.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 472 Study Abroad: Art History in Italy Credit: 1 (0-0-1)
Course Description: Special topics in Italian art history; most classes will be taught on-site at museums, churches, and galleries in Italy. Focus on the art and architecture of the famed Michelangelo Buonarroti.
Prerequisite: ART 212.
Terms Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 487 Internship Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in an approved location.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 492A Seminar: Art History Credits: 3 (0-0-3)
Course Description:
Prerequisite: ART 212.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 492B Seminar: Art Education Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
ART 495K Independent Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: ART 330.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496A Group Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496B Group Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496C Group Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496D Group Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496E Group Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496F Group Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496G Group Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496H Group Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: ART 212.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496I Group Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496J Group Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496K Group Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 510A Advanced Study in Art History: American Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510B Advanced Study in Art History: African Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510C Advanced Study in Art History: Pre-Colombian Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510E Advanced Study in Art History: United States Art Since 1945 Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ART 510F  Advanced Study in Art History: Greek Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510G  Advanced Study in Art History: Medieval Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510H  Advanced Study in Art History: Renaissance Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510I  Advanced Study in Art History: Baroque and Rococo Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510J  Advanced Study in Art History: 19th-Century European Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510K  Advanced Study in Art History: 20th Century European Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510M  Advanced Study in Art History: Roman Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510N  Advanced Study in Art History: Graphic Design  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510O  Advanced Study in Art History: Women in Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510P  Advanced Study in Art History: Pacific Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510Q  Advanced Study in Art History: Contemporary Art and Art Critics  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 514  Contemporary American Art Critics and Artists  Credits: 3 (0-0-3)
Course Description: Issues in contemporary American art are explored through the work of critics and artists who visit through the Critic and Artist Residency Series.
Prerequisite: ART 510E.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 515  Seminar-Contemporary Art Theory  Credits: 3 (0-0-3)
Course Description: Relationship between critical theory and the visual arts; how artists and critics apply theory in their work.
Prerequisite: ART 510E.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575A  Studio Problems: Painting  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ART 575B  Studio Problems: Printmaking  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575C  Studio Problems: Sculpture  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575D  Studio Problems: Fibers  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575E  Studio Problems: Metalsmithing and Jewelry  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575F  Studio Problems: Drawing  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575G  Studio Problems: Graphic Design  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575A  Studio Problems: Painting  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575A - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575B  Studio Problems: Printmaking  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575B - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575C  Studio Problems: Sculpture  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575C - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575D  Studio Problems: Fibers  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575D - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575E  Studio Problems: Metalsmithing and Jewelry  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575E - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575F  Studio Problems: Drawing  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575F - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575G  Studio Problems: Graphic Design  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575G - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 592  Art History Seminar  Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Required for course admittance: Twenty-one credits of art history.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 675A  Studio Problems: Painting  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575A - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 675B  Studio Problems: Printmaking  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575B - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675C  Studio Problems: Sculpture  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575C - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675D  Studio Problems: Fibers  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575D - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675E  Studio Problems: Metalsmithing and Jewelry  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575E - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675F  Studio Problems: Drawing  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575F - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 675G  Studio Problems: Graphic Design  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575G - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 674  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ART 695A Independent Study: Painting  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695B Independent Study: Printmaking  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695C Independent Study: Sculpture  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695D Independent Study: Fibers  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695E Independent Study: Metalsmithing and Jewelry  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695F Independent Study: Drawing  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695G Independent Study: Graphic Design  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695H Independent Study: Art History  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696A Group Study: Painting  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696B Group Study: Printmaking  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696C Group Study: Sculpture  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696D Group Study: Fibers  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696E Group Study: Metalsmithing and Jewelry  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696F Group Study: Drawing  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696G Group Study: Graphic Design  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696H Group Study: Art History  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ART 696I Group Study: Multiple Media Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699A Thesis: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575A and/or ART 675A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699B Thesis: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575B and/or ART 675B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699C Thesis: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575C and/or ART 675C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699D Thesis: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575D and/or ART 675D.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699E Thesis: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575E and/or ART 675E.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699F Thesis: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575F and/or ART 675F.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699G Thesis: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575G and/or ART 675G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Art, B.F.A.
Throughout history, art has been a fundamental language of the human spirit. Visual arts express human experience through an ever-widening range of media and materials, some of which include: oils, acrylics, pastels, charcoal, clay, plaster, steel, bronze, wood, copper, litho stones, and computers. Visual artists create abstract works and images of objects, people, nature, topography, and events. The Department of Art and Art History offers several options of study. The B.F.A. (Bachelor of Fine Arts) degree in studio art and the B.A. (Bachelor of Arts) degree in art history, art education, or studio art are all professional degrees, leading to related art careers.

Learning Outcomes
Students will demonstrate:

- Fundamental knowledge and mastery of media and processes necessary to communicate meaning in a work of art.
- Ability to communicate clearly about their own art and the art of others.
- Knowledge about contemporary art and motivation to view and discuss current local, regional, and national exhibitions. Students well versed on contemporary art would:
  a. regularly read reviews of exhibitions in local and national newspapers;
  b. regularly read art periodicals;
  c. attend multiple exhibitions; and
  d. be knowledgeable about contemporary artists in their discipline (i.e., nationally known painters, sculptors, etc.).

Potential Occupations
Art graduates possess a number of transferable communication, analytical, and critical thinking skills, and as a result find positions in academia, in addition to roles as freelance artists, graphic designers, art educators, art historians, studio fine artists and as "creatives" in government and industry. Many employers appreciate art majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Participation in internships, cooperative education, and service learning opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced
studies can attain more responsible positions with the possibility of rising to top professional levels.

Depending on student interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: art appraiser, art director, art therapist, exhibit designer, art critic, jeweler, gallery director, graphic design artist, free lance artist, sculptor, woodworker, welder, foundry worker, studio photographer, technical illustrator, painter, textile designer, weaver, art educator, art historian, art curator, art librarian, art museum educator, web page designer, photo lab technician, art restorer, and master printer.

**Bachelor of Fine Arts (B.F.A.)**

The B.F.A. degree is a professional program for careers in studio art. Students have an opportunity to concentrate in one of ten studio fields: Drawing, Electronic Art, Graphic Design, Fibers, Metalsmithing, Painting, Photo Image Making, Pottery, Printmaking, and Sculpture. The curriculum progression in the department is similar within the concentrations and some concentrations may have restrictions. Freshmen study foundation courses in the fine arts, which include drawing, painting, sculpture, and art history. Sophomores explore various concentration courses and become familiar with the studio practices for the concentration studios housed in separate wings that feature large, well-equipped studio spaces designed for exploration of work in a specific media. Juniors and seniors focus on advanced topics in their chosen concentration by taking one upper-division course in their chosen field each semester.

**Concentrations**

- Drawing Concentration
- Electronic Art Concentration
- Fibers Concentration
- Graphic Design Concentration
- Metalsmithing Concentration
- Painting Concentration
- Photo Image Making Concentration
- Pottery Concentration
- Printmaking Concentration
- Sculpture Concentration

**Requirements**

**Bachelor of Fine Arts Core Courses**

*Effective Spring 2016*

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
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<td>ART 105</td>
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<tr>
<td>ART 110</td>
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<td>ART 170</td>
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<tr>
<td>CO 150</td>
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<tr>
<td>Arts and Humanities(^1)</td>
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<td>Global and Cultural Awareness</td>
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<td><strong>Total Credits</strong></td>
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### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 212</td>
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</table>

Select three courses from the following: \(^2\)

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ART 230</td>
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<tr>
<td>ART 240</td>
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<td>ART 245</td>
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<td>ART 250</td>
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<td>ART 255</td>
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<tr>
<td>ART 256</td>
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<tr>
<td>ART 260</td>
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</tr>
<tr>
<td>ART 265</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

\(^1\)Semester 1 \(^2\)Upper-division courses
ART 270  Sculpture I  
ART 235  Intermediate Drawing I  
Upper-Division Art History\(^3\)  4A,4B  3  
Biological and Physical Sciences  3A  7  
Historical Perspectives  3D  3  
Social and Behavioral Sciences  3C  3  
Total Credits  31  

**Junior**

Concentration required course selection  8  
Art Electives  4  
Upper-Division Art History\(^3\)  4A,4B  3  
Upper-Division Art Elective  
Advanced Writing  2  3  
Arts and Humanities\(^1\)  3B  3  
Upper-Division Non-Art Elective  3  
Elective  3  
Total Credits  31  

**Senior**

Concentration required course selection  4C  8  
Upper-Division Art Elective  4  
Non-art electives\(^4\)  15  
Total Credits  27  

Program Total Credits:  120  

**Upper-Division Art History Courses\(^3\)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
<td>4A,4B</td>
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<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
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<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
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<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
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<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
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<td>ART 317</td>
<td>Native North American Art</td>
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<td>ART 410</td>
<td>Greek Art</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
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<td>ART 412</td>
<td>History of Renaissance Art</td>
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<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
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<td>ART 415</td>
<td>History of 19th Century European Art</td>
<td>4A,4B</td>
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<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
<td>4A,4B</td>
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<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
<td></td>
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</tbody>
</table>

\(^1\) Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.
Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

In order to complete the degree, a student must also complete one of the following concentrations: drawing, electronic art, fibers, graphic design, metalsmithing, painting, photo image making, pottery, printmaking, or sculpture.

**Major in Art (B.F.A.), Drawing Concentration**

**Requirements**

**Bachelor of Fine Arts Core Courses**

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ART 105</td>
<td>Issues and Practices in Art</td>
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<td>ART 110</td>
<td>Art History I</td>
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<td>ART 111</td>
<td>Art History II</td>
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<td>ART 135</td>
<td>Introduction to Drawing</td>
<td>3</td>
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<tr>
<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
<td>3</td>
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<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
<td>3</td>
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<tr>
<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>Global and Cultural Awareness</td>
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**Sophomore**

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<td>ART 212</td>
<td>Art History III</td>
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Select three courses from the following:

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<tr>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
<td>3</td>
</tr>
<tr>
<td>ART 240</td>
<td>Pottery I</td>
<td>3</td>
</tr>
<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
<td>3</td>
</tr>
<tr>
<td>ART 250</td>
<td>Fibers I</td>
<td>3</td>
</tr>
<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 256</td>
<td>Introduction to Electronic Art</td>
<td>3</td>
</tr>
<tr>
<td>ART 260</td>
<td>Painting I</td>
<td>3</td>
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<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
<td>3</td>
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<td>ART 235</td>
<td>Intermediate Drawing I</td>
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Upper-Division Art History | 4A,4B | 3 |

**Biological and Physical Sciences**

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**Historical Perspectives**

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### Social and Behavioral Sciences

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#### Junior

Concentration required course selection
Art Electives
Upper-Division Art History
Upper-Division Art Elective
Advanced Writing
Arts and Humanities
Upper-Division Non-Art Elective
Elective

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#### Senior

Concentration required course selection
Upper-Division Art Elective
Non-art electives

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**Program Total Credits:** 120

### Upper-Division Art History Courses

In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

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<thead>
<tr>
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<td>Art of Africa</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
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<td>ART 314</td>
<td>Women in Art History</td>
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<td>ART 315</td>
<td>United States Art 1945-1980</td>
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<td>Art of the Pacific</td>
<td>4A,4B</td>
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<td>ART 317</td>
<td>Native North American Art</td>
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<td>Greek Art</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
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<td>ART 412</td>
<td>History of Renaissance Art</td>
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<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
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<td>ART 415</td>
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<td>ART 417</td>
<td>Roman Art</td>
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<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
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---

1. Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2. Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

3. Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.
Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Drawing Concentration**

In addition to the Art (B.F.A.) core courses, the following must be completed:

### Effective Spring 2016

<table>
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<tr>
<td>ART 336</td>
<td>Intermediate Drawing III</td>
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<td><strong>SENIOR</strong></td>
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<tr>
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<td>Advanced Drawing I</td>
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<tr>
<td>ART 436</td>
<td>Advanced Drawing II</td>
<td>4C</td>
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**Major Completion Map**

**Distinctive Requirements for Degree Program**: C or better in ART 335, ART 336, ART 435, ART 436. B or better required in ART 335 for Admission to ART 336.

**To Declare this Major**: Admission to concentration requires competitive portfolio review at second Upper-Division course in concentration.

**Transfer Students**: 2.500 cumulative GPA. Admission to concentration requires competitive portfolio review at second Upper-Division course in concentration.

**Continuing CSU Students**: 2.500 cumulative GPA. Admission to concentration requires competitive portfolio review at second Upper-Division course in concentration.

**Freshman**

<table>
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<tr>
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<td>CO 150</td>
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<td>X</td>
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<td>Global and Cultural Awareness</td>
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**Semester 2**

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<td>ART 170</td>
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<tr>
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**Sophomore**

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<td>Select one course from the following:</td>
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<td>Pottery I</td>
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<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
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<td>ART 250</td>
<td>Fibers I</td>
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<td>Introduction to Graphic Design</td>
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**ART 260**  Painting I  
**ART 265**  Printmaking I-Intaglio and Relief  
**ART 270**  Sculpture I

### Biological and Physical Sciences

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### Historical Perspectives

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**Total Credits: 16**

#### Semester 4

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<td>ART 260</td>
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**Upper-Division Art History (AUCC 4A/4B) (See List on Major in ART, BFA Core Requirements Tab)**

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**Biological and Physical Sciences**

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**ART 235 must be completed by the end of Semester 4.**

**Total Credits: 15**

#### Junior

#### Semester 5

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**Advanced Writing**

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**Arts and Humanities**

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**Upper-Division Art History (See List on Major in ART, BFA Core Requirements Tab)**

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**ART Elective**

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**Total Credits: 17**

#### Semester 6

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**Upper-Division Art Elective**

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**Upper-Division General Elective**

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**General Elective**

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**Total Credits: 14**

#### Senior

#### Semester 7

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**Upper-Division General Elective**

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<th>Credits</th>
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**General Electives**

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**Total Credits: 13**

#### Semester 8

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**Upper-Division Art Elective**

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**Upper-Division General Electives**

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**The benchmark courses for the 8th semester are the remaining courses in the entire program of study.**

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**Total Credits: 14**
Major in Art (B.F.A.), Electronic Art Concentration

Requirements

Bachelor of Fine Arts Core Courses

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student's concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

Freshman

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<tr>
<td>ART 111</td>
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<td>ART 135</td>
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Total Credits 31

Sophomore

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Select three courses from the following: 2

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Upper-Division Art History 3

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Biological and Physical Sciences 3A

Historical Perspectives 3D

Social and Behavioral Sciences 3C

Total Credits 31

Junior

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<tr>
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1. Arts and Humanities
2. Select three courses from the following:
3. Upper-Division Art History

Total Credits 31
Upper-Division Non-Art Elective 3
Elective 3
Total Credits 31

Senior

Concentration required course selection 4C 8
Upper-Division Art Elective 4
Non-art electives 4
Total Credits 27

Program Total Credits: 120

Upper-Division Art History Courses 3

<table>
<thead>
<tr>
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<td>ART 310</td>
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<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
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<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
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<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
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<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 317</td>
<td>Native North American Art</td>
<td>4A,4B</td>
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<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
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<td>History of Renaissance Art</td>
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<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
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<td>ART 415</td>
<td>History of 19th Century European Art</td>
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<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
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<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
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<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
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</table>

1 Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2 Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

3 Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Electronic Art Concentration

In addition to the art (B.F.A.) core courses, the following must be completed:

Effective Fall 2015

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
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<tr>
<td>ART 357</td>
<td>Interactive Media</td>
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<tr>
<td>ART 358</td>
<td>Experimental Video</td>
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</table>
**Major Completion Map**

**Distinctive Requirements for Degree Program:** C or better in ART 357, ART 358, ART 457, ART 458.

**To prepare for first semester:**
- **Transfer Students:** 2.500 cumulative GPA. Sophomore restriction for ART 256.
- **Continuing CSU Students:** 2.500 cumulative GPA.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<td>CO 150</td>
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<td>Global and Cultural Awareness</td>
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**Total Credits:** 16

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<tr>
<td>Arts and Humanities</td>
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<td>Mathematics</td>
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**Total Credits:** 15

### Sophomore

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<td>Photo Image Making I</td>
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<td>Pottery I</td>
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<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
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<td>ART 250</td>
<td>Fibers I</td>
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<tr>
<td>ART 255</td>
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<td>ART 260</td>
<td>Painting I</td>
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<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
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<td>ART 270</td>
<td>Sculpture I</td>
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**Total Credits:** 16

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Total Credits: 15

**Junior**

**Semester 5**

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Total Credits: 17

**Semester 6**

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Total Credits: 14

**Senior**

**Semester 7**

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Total Credits: 13

**Semester 8**

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Total Credits: 14

Program Total Credits: 120

**Major in Art (B.F.A.), Fibers Concentration Requirements**

**Bachelor of Fine Arts Core Courses**

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student's concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.
### Freshman

<table>
<thead>
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<th>Course</th>
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<td>Art History I</td>
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<tr>
<td>ART 111</td>
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<tr>
<td>ART 135</td>
<td>Introduction to Drawing</td>
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<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
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<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
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<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
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<td>Global and Cultural Awareness</td>
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**Total Credits:** 31

### Sophomore

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<td>Pottery I</td>
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<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
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<td>ART 250</td>
<td>Fibers I</td>
<td></td>
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<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
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**Total Credits:** 31

### Junior

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<td>Arts and Humanities¹</td>
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<td>Upper-Division Non-Art Elective</td>
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**Total Credits:** 31

### Senior

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**Total Credits:** 27

**Program Total Credits:** 120
## Upper-Division Art History Courses

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<td>Art of Africa</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
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<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
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<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
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<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
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<td>ART 317</td>
<td>Native North American Art</td>
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<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
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<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4A,4B</td>
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<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4A,4B</td>
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<td>ART 415</td>
<td>History of 19th Century European Art</td>
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<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
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<td>ART 417</td>
<td>Roman Art</td>
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<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
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</table>

1. Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2. Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

3. Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Fibers Concentration

In addition to the Art (B.F.A.) core courses, the following must be completed:

**Effective Fall 2015**

<table>
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<td>ART 350</td>
<td>Fibers II</td>
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<td>ART 351</td>
<td>Fibers III</td>
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<td>ART 450</td>
<td>Fibers IV</td>
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<td>ART 451</td>
<td>Fibers V</td>
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<td>4C</td>
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</table>

## Major Completion Map

**Distinctive Requirements for Degree Program:** C or better in ART 350, ART 351, ART 450, ART 451.

**To prepare for first semester:**
Transfer Students: 2.500 cumulative GPA.
### Continuing CSU Students: 2.500 cumulative GPA.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<td>ART 160</td>
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<td>CO 150</td>
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<td>1A</td>
<td>3</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
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<td>ART 136</td>
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<td>ART 170</td>
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<td>Arts and Humanities</td>
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<td>Mathematics</td>
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#### Sophomore

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<td>ART 235</td>
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<td>Select one course from the following:</td>
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<td>ART 240</td>
<td>Pottery I</td>
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<tr>
<td>ART 245</td>
<td>Metallurgy and Jewelry I</td>
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<td>ART 255</td>
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<td>ART 256</td>
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<td>ART 265</td>
<td>Printmaking I: Intaglio and Relief</td>
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<td>ART 270</td>
<td>Sculpture I</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
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<td>Historical Perspectives</td>
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<td>Pottery I</td>
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<td>ART 245</td>
<td>Metallurgy and Jewelry I</td>
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<td>ART 255</td>
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<td>ART 256</td>
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**Major in Art (B.F.A.), Graphic Design Concentration Requirements**

**Bachelor of Fine Arts Core Courses**

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

**Freshman**

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**Semester 5**

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**Semester 8**

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<td>Upper-Division General Electives</td>
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<tr>
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**Program Total Credits:** 120
Major in Art (B.F.A.), Graphic Design Concentration

Global and Cultural Awareness 3E 3
Mathematics 1B 3

Total Credits 31

Sophomore

ART 212 Art History III 3
Select three courses from the following: 9
ART 230 Photo Image Making I
ART 240 Pottery I
ART 245 Metalsmithing and Jewelry I
ART 250 Fibers I
ART 255 Introduction to Graphic Design
ART 256 Introduction to Electronic Art
ART 260 Painting I
ART 265 Printmaking I-Intaglio and Relief
ART 270 Sculpture I
ART 235 Intermediate Drawing I 3

Upper-Division Art History 4A,4B 3
Biological and Physical Sciences 3A 7
Historical Perspectives 3D 3
Social and Behavioral Sciences 3C 3

Total Credits 31

Junior

Concentration required course selection 8
Art Electives 4
Upper-Division Art History 4A,4B 3
Upper-Division Art Elective 4
Advanced Writing 2 3
Arts and Humanities 3B 3
Upper-Division Non-Art Elective 3
Elective 3

Total Credits 31

Senior

Concentration required course selection 4C 8
Upper-Division Art Elective 4
Non-art electives 4 15

Total Credits 27

Program Total Credits: 120

Upper-Division Art History Courses

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<th>Credits</th>
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<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
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<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
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<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
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<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
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In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
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<tr>
<td>ART 317</td>
<td>Native North American Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
<td></td>
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</tbody>
</table>

1. Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2. Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design, ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

3. Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Graphical Design Concentration

In addition to the Art (B.F.A.) core courses, the following must be completed:

Effective Fall 2016

<table>
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<tr>
<td>ART 355</td>
<td>Typography and Design Systems</td>
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<tr>
<td>ART 356</td>
<td>Illustration</td>
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<td>SENIOR</td>
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<tr>
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<td>Advanced Typography and Design Systems</td>
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<td>ART 456</td>
<td>Advanced Illustration</td>
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</table>

Major Completion Map

Distinctive Requirements for Degree Program: C or better in ART 355, ART 356, ART 455, ART 456.

To Declare this Major:
Transfer Students: 2.500 cumulative GPA. Sophomore restriction for ART 255.
Continuing CSU Students: 2.500 cumulative GPA.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sem 1</th>
<th>Critical</th>
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<th>AUCC</th>
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<tbody>
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<td>Art History I</td>
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<td>ART 135</td>
<td>Introduction to Drawing</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
<td>X</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X 1A</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>X 3E</td>
<td></td>
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<td></td>
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<tr>
<td>Total Credits</td>
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### Sophomore

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<td>ART 212</td>
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<td>X</td>
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</tr>
<tr>
<td>ART 235</td>
<td>Intermediate Drawing I</td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

- ART 230 Photo Image Making I
- ART 240 Pottery I
- ART 245 Metalsmithing and Jewelry I
- ART 250 Fibers I
- ART 255 Introduction to Graphic Design
- ART 256 Introduction to Electronic Art
- ART 260 Painting I
- ART 265 Printmaking I-Intaglio and Relief
- ART 270 Sculpture I

- Biological and Physical Sciences X 3A 4
- Historical Perspectives X 3D 3

**Total Credits**: 15

### Semester 4

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<th>Credits</th>
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<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
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Select one course from the following not previously taken:

- ART 230 Photo Image Making I
- ART 240 Pottery I
- ART 245 Metalsmithing and Jewelry I
- ART 250 Fibers I
- ART 255 Introduction to Graphic Design
- ART 256 Introduction to Electronic Art
- ART 260 Painting I
- ART 265 Printmaking I-Intaglio and Relief
- ART 270 Sculpture I

Upper-Division Art History (AUCC 4A/4B) (See List on Major in ART, BFA Core Requirements Tab) 4A,4B 3

- Biological and Physical Sciences X 3A 3
- Social and Behavioral Sciences X 3C 3

ART 235 must be completed by the end of Semester 4. X

**Total Credits**: 16

### Junior

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<tr>
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<th>Credits</th>
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<td>Advanced Writing</td>
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<tr>
<td>Arts and Humanities</td>
<td>X 3B</td>
<td>3</td>
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Upper-Division Art History (See List on Major in ART, BFA Core Requirements Tab) X 3

ART Elective X 4

**Total Credits**: 15

### Semester 6

<table>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 356</td>
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<tr>
<td>Upper-Division Art Elective</td>
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</table>
Upper-Division General Elective X 3
General Elective X 3

Total Credits 14

Senior

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ART 455 Advanced Typography and Design Systems</td>
<td>X</td>
<td>4C</td>
<td>4</td>
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<tr>
<td>Upper-Division General Elective</td>
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<td>General Electives</td>
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Total Credits 13

<table>
<thead>
<tr>
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<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 456 Advanced Illustration</td>
<td>X</td>
<td>4C</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Upper-Division Art Elective</td>
<td>X</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper-Division General Electives</td>
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<td>6</td>
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</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 14

Program Total Credits: 120

Major in Art (B.F.A.), Metalsmithing Concentration
Requirements

Bachelor of Fine Arts Core Courses
A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

Freshman

| ART 105 | Issues and Practices in Art | AUCC | Credits |
| ART 110 | Art History I | 1 |
| ART 111 | Art History II | 3 |
| ART 135 | Introduction to Drawing | 3 |
| ART 136 | Introduction to Figure Drawing | 3 |
| ART 160 | Two-Dimensional Visual Fundamentals | 3 |
| ART 170 | Three-Dimensional Visual Fundamentals | 3 |
| CO 150 | College Composition (GT-CO2) | 1A |
| Arts and Humanities | 3B |
| Global and Cultural Awareness | 3E |
| Mathematics | 1B |

Total Credits 31

Sophomore

| ART 212 | Art History III | 3 |
| Select three courses from the following: | 9 |
| ART 230 | Photo Image Making I |
| ART 240 | Pottery I |
| ART 245 | Metalsmithing and Jewelry I |
| ART 250 | Fibers I |
| ART 255 | Introduction to Graphic Design |
Major in Art (B.F.A.), Metalsmithing Concentration

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>ART 256</td>
<td>Introduction to Electronic Art</td>
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<td>ART 260</td>
<td>Painting I</td>
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<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
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<td></td>
</tr>
<tr>
<td>ART 270</td>
<td>Sculpture I</td>
<td></td>
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<tr>
<td>ART 235</td>
<td>Intermediate Drawing I</td>
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Upper-Division Art History$^3$  

**Total Credits**  31

**Junior**

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<th>Category</th>
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<td>Upper-Division Art History$^3$</td>
<td>3A,4B</td>
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<tr>
<td>Upper-Division Art Elective</td>
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<tr>
<td>Advanced Writing</td>
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<tr>
<td>Arts and Humanities$^1$</td>
<td>3B</td>
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<tr>
<td>Upper-Division Non-Art Elective</td>
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<tr>
<td>Elective</td>
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**Total Credits**  31

**Senior**

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<tr>
<th>Category</th>
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<td>Concentration required course selection</td>
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<tr>
<td>Upper-Division Art Elective</td>
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<tr>
<td>Non-art electives$^4$</td>
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**Total Credits**  27

Program Total Credits:  120

**Upper-Division Art History Courses $^3$**

In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
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<tr>
<td>ART 311</td>
<td>Art of Africa</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
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<tr>
<td>ART 314</td>
<td>Women in Art History</td>
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<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
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<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
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<td>ART 317</td>
<td>Native North American Art</td>
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<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
<td>4A,4B</td>
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<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
<td>4A,4B</td>
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<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
<td></td>
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</tbody>
</table>
Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Metalsmithing Concentration**

In addition to the Art (B.F.A.) core courses, the following must be completed:

**Effective Fall 2016**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>ART 345</td>
<td>Metalsmithing and Jewelry II</td>
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<td>ART 346</td>
<td>Metalsmithing and Jewelry III</td>
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<td>Metalsmithing and Jewelry V</td>
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</table>

**Major Completion Map**

**Distinctive Requirements for Degree Program:** C or better in ART 345, ART 346 ART 445, ART 446.

**To prepare for first semester:**

**Transfer Students:** 2.500 cumulative GPA. Sophomore restriction for ART 245.

**Continuing CSU Students:** 2.500 cumulative GPA.

**Freshman**

<table>
<thead>
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<th>Semester 1</th>
<th>Critical</th>
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<th>Credits</th>
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<td>CO 150</td>
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<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
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**Semester 2**

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<td>ART 136</td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>ART 170</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>X</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
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**Sophomore**

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<td>ART 235</td>
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<td>Select one course from the following:</td>
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<td>ART 230</td>
<td>Photo Image Making I</td>
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</table>
### Major in Art (B.F.A.), Metalsmithing Concentration

| ART 240 | Pottery I |
| ART 250 | Fibers I |
| ART 255 | Introduction to Graphic Design |
| ART 256 | Introduction to Electronic Art |
| ART 260 | Painting I |
| ART 265 | Printmaking I-Intaglio and Relief |
| ART 270 | Sculpture I |

#### Biological and Physical Sciences
- X 3A 4

#### Historical Perspectives
- X 3D 3

**Total Credits** 16

**Semester 4**

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<tbody>
<tr>
<td>ART 245</td>
<td>Metallsmithing and Jewelry I</td>
<td>X</td>
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Select one course from the following not previously taken:
- ART 230 Photo Image Making I
- ART 240 Pottery I
- ART 250 Fibers I
- ART 255 Introduction to Graphic Design
- ART 256 Introduction to Electronic Art
- ART 260 Painting I
- ART 265 Printmaking I-Intaglio and Relief
- ART 270 Sculpture I

#### Upper-Division Art History (AUCC 4A/4B) (See List on Major in ART, BFA Core Requirements Tab)
- 4A, 4B 3

#### Biological and Physical Sciences
- X 3A 3

#### Social and Behavioral Sciences
- X 3C 3

**ART 235 must be completed by the end of Semester 4.**

<table>
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#### Junior

**Semester 5**

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<td>ART 345</td>
<td>Metallsmithing and Jewelry II</td>
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#### Advanced Writing
- X 2 3

#### Arts and Humanities
- X 3B 3

#### Upper-Division Art History (See List on Major in ART, BFA Core Requirements Tab)
- X 3 3

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**Semester 6**

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#### Upper-Division Art Elective
- X 4 4

#### Upper-Division General Elective
- X 3 3

#### General Elective
- X 3 3

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#### Senior

**Semester 7**

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#### Upper-Division General Elective
- X 3 3

#### General Electives
- X 6 3

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<th>AUCC</th>
<th>Credits</th>
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**Semester 8**

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<th>Credits</th>
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<td>ART 446</td>
<td>Metallsmithing and Jewelry V</td>
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<td>4C 4</td>
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#### Upper-Division Art Elective
- X 4 4

#### Upper-Division General Electives
- X 6 6
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

\[
\begin{array}{|c|c|}
\hline
\text{Total Credits} & 14 \\
\hline
\text{Program Total Credits:} & 120 \\
\hline
\end{array}
\]

Major in Art (B.F.A.), Painting Concentration Requirements

**Bachelor of Fine Arts Core Courses**

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

**Freshman**

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<thead>
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<td>Issues and Practices in Art</td>
</tr>
<tr>
<td>ART 110</td>
<td></td>
<td>Art History I</td>
</tr>
<tr>
<td>ART 111</td>
<td></td>
<td>Art History II</td>
</tr>
<tr>
<td>ART 135</td>
<td></td>
<td>Introduction to Drawing</td>
</tr>
<tr>
<td>ART 136</td>
<td></td>
<td>Introduction to Figure Drawing</td>
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<tr>
<td>ART 160</td>
<td></td>
<td>Two-Dimensional Visual Fundamentals</td>
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<tr>
<td>ART 170</td>
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<td>Three-Dimensional Visual Fundamentals</td>
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<td>CO 150</td>
<td>1A</td>
<td>College Composition (GT-CO2)</td>
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<td></td>
<td>3B</td>
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<td></td>
<td>3E</td>
<td>Global and Cultural Awareness</td>
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<tr>
<td></td>
<td>1B</td>
<td>Mathematics</td>
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**Sophomore**

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<td>ART 212</td>
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<td>Art History III</td>
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<td>Select three courses from the following:</td>
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<td>ART 230</td>
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<td>Photo Image Making I</td>
</tr>
<tr>
<td>ART 240</td>
<td></td>
<td>Pottery I</td>
</tr>
<tr>
<td>ART 245</td>
<td></td>
<td>Metalsmithing and Jewelry I</td>
</tr>
<tr>
<td>ART 250</td>
<td></td>
<td>Fibers I</td>
</tr>
<tr>
<td>ART 255</td>
<td></td>
<td>Introduction to Graphic Design</td>
</tr>
<tr>
<td>ART 256</td>
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<td>Introduction to Electronic Art</td>
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<td>ART 260</td>
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<td>Painting I</td>
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<td>ART 265</td>
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<td>Printmaking I-Intaglio and Relief</td>
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<td>ART 270</td>
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<td>Sculpture I</td>
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<tr>
<td>ART 235</td>
<td></td>
<td>Intermediate Drawing I</td>
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<tr>
<td>Upper-Division Art History(^3)</td>
<td>4A,4B</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>7</td>
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<tr>
<td>Historical Perspectives</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
<td>3</td>
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<td></td>
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<td><strong>Total Credits</strong></td>
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**Junior**

Concentration required course selection | 8
Major in Art (B.F.A.), Painting Concentration

Art Electives

Upper-Division Art History\(^3\) 4A,4B 3
Upper-Division Art Elective 4
Advanced Writing 2 3
Arts and Humanities\(^1\) 3B 3
Upper-Division Non-Art Elective 3
Elective 3

Total Credits 31

Senior

Concentration required course selection 4C 8
Upper-Division Art Elective 4
Non-art electives\(^4\) 15

Total Credits 27

Program Total Credits: 120

Upper-Division Art History Courses \(^3\)

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
<td>4A,4B</td>
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<tr>
<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
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<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 317</td>
<td>Native North American Art</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
<td>4A,4B</td>
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<tr>
<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
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</table>

\(^1\) Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

\(^2\) Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

\(^3\) Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

\(^4\) Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Painting Concentration

In addition to the Art (B.F.A.) core courses, the following must be completed:
**Effective Fall 2016**

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<td>ART 360</td>
<td>Painting Methods and Materials</td>
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<td>ART 361</td>
<td>Figure Painting</td>
<td></td>
<td>4</td>
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<tr>
<td>ART 460</td>
<td>Advanced Painting I</td>
<td>4C</td>
<td>4</td>
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<tr>
<td>ART 461</td>
<td>Advanced Painting II</td>
<td>4C</td>
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**Major Completion Map**

**Distinctive Requirements for Degree Program:** C or better in ART 360, ART 361, ART 460, and ART 461.

**To Declare this Major:**

**Transfer Students:** 2.500 cumulative GPA.

**Continuing CSU Students:** 2.500 cumulative GPA.

**Freshman**

**Semester 1**

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<td>ART 105</td>
<td>Issues and Practices in Art</td>
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<tr>
<td>ART 110</td>
<td>Art History I</td>
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<td>3</td>
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<tr>
<td>ART 135</td>
<td>Introduction to Drawing</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
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**Total Credits**

16

**Semester 2**

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<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
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Arts and Humanities

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**Total Credits**

15

**Sophomore**

**Semester 3**

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<td>ART 235</td>
<td>Intermediate Drawing I</td>
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<td>3</td>
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Select one course from the following:

| ART 230  | Photo Image Making I |     | 3       |
| ART 240  | Pottery I            |     | 3       |
| ART 245  | Metalsmithing and Jewelry I |     | 3       |
| ART 250  | Fibers I             |     | 3       |
| ART 255  | Introduction to Graphic Design |     | 3       |
| ART 256  | Introduction to Electronic Art |     | 3       |
| ART 265  | Printmaking Intaglio and Relief |     | 3       |
| ART 270  | Sculpture I          |     | 3       |

Biological and Physical Sciences

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<tr>
<td>ART 250</td>
<td>Photo Image Making I</td>
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Historical Perspectives

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<tr>
<td>ART 250</td>
<td>Photo Image Making I</td>
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**Total Credits**

16

**Semester 4**

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<td>ART 260</td>
<td>Painting I</td>
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Select one course from the following not previously taken:

| ART 260  | Painting I | X    | 3       |
ART 230 Photo Image Making I
ART 240 Pottery I
ART 245 Metalsmithing and Jewelry I
ART 250 Fibers I
ART 255 Introduction to Graphic Design
ART 256 Introduction to Electronic Art
ART 265 Printmaking I-Intaglio and Relief
ART 270 Sculpture I

Upper-Division Art History (AUCC 4A/4B) (See List on Major in ART, BFA Core Requirements Tab) 4A,4B 3
Biological and Physical Sciences X 3A 3
Social and Behavioral Sciences X 3C 3
ART 235 must be completed by the end of Semester 4. X

| Total Credits | 15 |

**Junior**

<table>
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| Total Credits | 17 |

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<td>X</td>
<td>4</td>
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<tr>
<td>Upper-Division General Elective</td>
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<td>General Elective</td>
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| Total Credits | 14 |

**Senior**

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<td>3</td>
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<tr>
<td>General Electives</td>
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| Total Credits | 13 |

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<tr>
<td>Upper-Division General Electives</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td></td>
<td></td>
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| Total Credits | 14 |

Program Total Credits: 120

Major in Art (B.F.A.), Photo Image Making Concentration
Requirements
Bachelor of Fine Arts Core Courses

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

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<td>Arts and Humanities¹</td>
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<td>Global and Cultural Awareness</td>
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<td>Mathematics</td>
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<tr>
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<td>ART 230</td>
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<tr>
<td>ART 245</td>
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<tr>
<td>ART 250</td>
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<td>ART 256</td>
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<tr>
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<td></td>
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<td>ART 265</td>
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<tr>
<td>ART 270</td>
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</tr>
<tr>
<td>ART 235</td>
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<tr>
<td>Upper-Division Art History³</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>7</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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<table>
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<tr>
<td>Art Electives</td>
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<tr>
<td>Upper-Division Art History³</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>Upper-Division Art Elective</td>
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<tr>
<td>Advanced Writing</td>
<td>2</td>
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<tr>
<td>Arts and Humanities¹</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Upper-Division Non-Art Elective</td>
<td></td>
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<tr>
<td>Elective</td>
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Senior

Concentration required course selection

<table>
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<tbody>
<tr>
<td></td>
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Upper-Division Art Elective

<table>
<thead>
<tr>
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<th>Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td></td>
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</table>

Non-art electives

Total Credits                                      27

Program Total Credits:                               120

Upper-Division Art History Courses

In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
<td>4A,4B</td>
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<tr>
<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 317</td>
<td>Native North American Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
<td>4A,4B</td>
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<tr>
<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
<td></td>
</tr>
</tbody>
</table>

1. Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2. Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

3. Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Photo Image Making Concentration

In addition to the Art (B.F.A.) core courses, the following must be completed:

Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ART 330</td>
<td>Photo Image Making II</td>
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<tr>
<td>ART 331</td>
<td>Photo Image Making III</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 430</td>
<td>Advanced Photo Image Making I</td>
<td>4C</td>
<td>4</td>
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</table>
## Major Completion Map

**Distinctive Requirements for Degree Program**: C or better in ART 330, ART 331, ART 430, and ART 431. Upper-Division coursework begins in fall semester.

**To Declare this Major:**
- **Transfer Students**: 2.500 cumulative GPA. Sophomore restriction for ART 230.
- **Continuing CSU Students**: 2.500 cumulative GPA.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>AUCC</th>
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<td></td>
<td>X</td>
<td>1</td>
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<tr>
<td>ART 110</td>
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<td>ART 135</td>
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<td>ART 160</td>
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<tr>
<td>CO 150</td>
<td></td>
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**Total Credits**: 16

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ART 212</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 235</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one course from the following:

- ART 240  Pottery I
- ART 245  Metalsmithing and Jewelry I
- ART 250  Fibers I
- ART 255  Introduction to Graphic Design
- ART 256  Introduction to Electronic Art
- ART 260  Painting I
- ART 265  Printmaking I-Intaglio and Relief
- ART 270  Sculpture I

**Bio./Physical Sciences**

- Biological and Physical Sciences: X 3A 4

**Historical Perspectives**

- Historical Perspectives: X 3D 3

**Total Credits**: 16

### Senior

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>ART 230</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
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</tbody>
</table>

Select one course from the following not previously taken:

- ART 240  Pottery I
- ART 245  Metalsmithing and Jewelry I
- ART 250  Fibers I
- ART 255  Introduction to Graphic Design
- ART 256  Introduction to Electronic Art
- ART 260  Painting I
- ART 265  Printmaking I-Intaglio and Relief

**Total Credits**: 3
**ART 270**  
Sculpture I

Upper-Division Art History (AUCC 4A/4B) (See List on Major in ART, BFA Core Requirements Tab)

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<th>Biological and Physical Sciences</th>
<th>X</th>
<th>3A</th>
<th>3</th>
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<tbody>
<tr>
<td>Social and Behavioral Sciences</td>
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ART 235 must be completed by the end of Semester 4.

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**Junior**

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<td>X</td>
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<td>3</td>
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<td>X</td>
<td>3B</td>
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<td>x</td>
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<tr>
<td>Upper-Division General Elective</td>
<td>X</td>
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<tr>
<td>General Elective</td>
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<thead>
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**Senior**

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<tbody>
<tr>
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<td>Upper-Division General Elective</td>
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<tr>
<td>General Electives</td>
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<tr>
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<tr>
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</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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</thead>
<tbody>
<tr>
<td>14</td>
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</tbody>
</table>

Program Total Credits: 120

**Major in Art (B.F.A.), Pottery Concentration**

**Bachelor of Fine Arts Core Courses**

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

<table>
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<tr>
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<tr>
<td>ART 110</td>
<td>Art History I</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
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</tr>
<tr>
<td>ART 111</td>
<td>Art History II</td>
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</tr>
<tr>
<td>ART 135</td>
<td>Introduction to Drawing</td>
<td>3</td>
</tr>
<tr>
<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
<td>3</td>
</tr>
<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
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<tr>
<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
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<tr>
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<td>College Composition (GT-CO2)</td>
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</tr>
<tr>
<td>arts and humanities 1</td>
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<td>3B</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
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<tr>
<td>Mathematics</td>
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**Total Credits** 31

### Sophomore

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<tr>
<td>select three courses from the following: 2</td>
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<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
<td></td>
</tr>
<tr>
<td>ART 240</td>
<td>Pottery I</td>
<td></td>
</tr>
<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
<td></td>
</tr>
<tr>
<td>ART 250</td>
<td>Fibers I</td>
<td></td>
</tr>
<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
<td></td>
</tr>
<tr>
<td>ART 256</td>
<td>Introduction to Electronic Art</td>
<td></td>
</tr>
<tr>
<td>ART 260</td>
<td>Painting I</td>
<td></td>
</tr>
<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
<td></td>
</tr>
<tr>
<td>ART 270</td>
<td>Sculpture I</td>
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</tr>
<tr>
<td>ART 235</td>
<td>Intermediate Drawing I</td>
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**Upper-Division Art History 3**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
<td>4A,4B</td>
</tr>
<tr>
<td>ART 240</td>
<td>Pottery I</td>
<td>3A</td>
</tr>
<tr>
<td>ART 250</td>
<td>Fibers I</td>
<td>3D</td>
</tr>
<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
<td>3C</td>
</tr>
</tbody>
</table>

**Total Credits** 31

### Junior

**Concentration required course selection**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>arts and humanities 1</td>
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<td>3B</td>
</tr>
</tbody>
</table>

**Upper-Division Non-Art Elective**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective</td>
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**Total Credits** 31

### Senior

**Concentration required course selection**

<table>
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<th>Course Title</th>
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</tr>
</thead>
<tbody>
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**Upper-Division Art Elective**

<table>
<thead>
<tr>
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<th>Course Title</th>
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**Non-art electives 4**

<table>
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**Total Credits** 27

**Program Total Credits:** 120
**Upper-Division Art History Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
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<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
<td></td>
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<tr>
<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
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<tr>
<td>ART 317</td>
<td>Native North American Art</td>
<td>4A,4B</td>
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<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
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<tr>
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<td>History of Renaissance Art</td>
<td>4A,4B</td>
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<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
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<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
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<tr>
<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
<td>4A,4B</td>
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<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
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</table>

1. Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2. Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

3. Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Pottery Concentration**

In addition to the Art (B.F.A.) core courses, the following must be completed:

**Effective Fall 2016**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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<td>ART 340</td>
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<tr>
<td>ART 341</td>
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<td>Pottery IV</td>
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<td>ART 441</td>
<td>Pottery V</td>
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**Major Completion Map**

_Distinctive Requirements for Degree Program:_ C or better in ART 340 ART 341, ART 440, and ART 441.

_To Declare this Major:_

_Transfer Students:_ 2.500 cumulative GPA. Sophomore restriction for ART 240.
**Continuing CSU Students:** 2.500 cumulative GPA.

### Freshman

<table>
<thead>
<tr>
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<tbody>
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<td>ART 110</td>
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<td>ART 135</td>
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<tr>
<td>ART 160</td>
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<td>X</td>
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<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>X 1A</td>
<td></td>
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<td>3</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>X 3E</td>
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<td>ART 136</td>
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<td>ART 170</td>
<td>X</td>
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<tr>
<td>Arts and Humanities</td>
<td>X 3B</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>ART 235</td>
<td>X</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
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<td>ART 245</td>
<td>Metallurgical and Jewelry I</td>
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<tr>
<td>ART 250</td>
<td>Fibers I</td>
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<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
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<tr>
<td>ART 256</td>
<td>Introduction to Electronic Art</td>
<td></td>
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<tr>
<td>ART 260</td>
<td>Painting I</td>
<td></td>
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<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
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<tr>
<td>ART 270</td>
<td>Sculpture I</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>X 3A</td>
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<tr>
<td>Historical Perspectives</td>
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### Semester 4

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<td>ART 230</td>
<td>Photo Image Making I</td>
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<tr>
<td>ART 245</td>
<td>Metallurgical and Jewelry I</td>
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<td>ART 250</td>
<td>Fibers I</td>
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<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
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<td></td>
</tr>
<tr>
<td>ART 256</td>
<td>Introduction to Electronic Art</td>
<td></td>
<td></td>
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<tr>
<td>ART 260</td>
<td>Painting I</td>
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<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
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<td>ART 270</td>
<td>Sculpture I</td>
<td></td>
<td></td>
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<tr>
<td>Upper-Division Art History (AUCC 4A/4B) (See List on Major in ART, BFA Core Requirements Tab)</td>
<td>4A,4B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>X 3A</td>
<td></td>
<td>3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>X 3C</td>
<td></td>
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<tr>
<td>ART 235 must be completed by the end of Semester 4.</td>
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</table>

| **Total Credits** | **15** | | | |
### Major in Art (B.F.A.), Printmaking Concentration

#### Bachelor of Fine Arts Core Courses

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

#### Freshman

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<tr>
<th>Course</th>
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<td>ART 105</td>
<td>Issues and Practices in Art</td>
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<td>ART 110</td>
<td>Art History I</td>
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<tr>
<td>ART 111</td>
<td>Art History II</td>
<td>3</td>
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<tr>
<td>ART 135</td>
<td>Introduction to Drawing</td>
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<tr>
<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
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<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
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<tr>
<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
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</table>
Global and Cultural Awareness 3E 3
Mathematics 1B 3

Total Credits 31

Sophomore

ART 212  Art History III 3
Select three courses from the following.

ART 230  Photo Image Making I
ART 240  Pottery I
ART 245  Metalsmithing and Jewelry I
ART 250  Fibers I
ART 255  Introduction to Graphic Design
ART 256  Introduction to Electronic Art
ART 260  Painting I
ART 265  Printmaking I-Intaglio and Relief
ART 270  Sculpture I
ART 235  Intermediate Drawing I

Upper-Division Art History

ART 310  History of American Art to 1945 4A,4B 3
ART 311  Art of Africa 4A,4B
ART 312  History of Pre-Columbian Art 4A,4B
ART 314  Women in Art History 4A,4B
ART 315  United States Art 1945-1980 4A,4B

Total Credits 31

Junior

Concentration required course selection

Art Electives

Upper-Division Art History

Upper-Division Art Elective

Advanced Writing

Arts and Humanities

Upper-Division Non-Art Elective

Elective

Total Credits 31

Senior

Concentration required course selection

Upper-Division Art Elective

Non-art electives

Total Credits 27

Program Total Credits: 120

Upper-Division Art History Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ART 310</td>
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<tr>
<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
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<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
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<tr>
<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
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</tr>
<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
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</table>
Printmaking Concentration
In addition to the Art (B.F.A.) core courses, the following must be completed:

Effective Fall 2016

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<th>Credits</th>
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<tbody>
<tr>
<td>JUNIOR</td>
<td>Printmaking II-Lithography</td>
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<td></td>
<td>Printmaking III-Studio Workshop</td>
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<tr>
<td>SENIOR</td>
<td>Printmaking IV-Studio Workshop</td>
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<td>Printmaking V-Studio Workshop</td>
<td>4C</td>
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Major Completion Map

Distinctive Requirements for Degree Program: C or better in ART 365, ART 366, ART 465, and ART 466.

To Declare this Major:
Transfer Students: 2.500 cumulative GPA. Sophomore restriction for ART 265.
Continuing CSU Students: 2.500 cumulative GPA.
<table>
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<tr>
<td>Mathematics</td>
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<tr>
<td>CO 150</td>
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**Sophomore**

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<tr>
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<td>ART 235</td>
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<td>Metalsmithing and Jewelry I</td>
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<td>Introduction to Electronic Art</td>
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<td>ART 270</td>
<td>Sculpture I</td>
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<td>Historical Perspectives</td>
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**Total Credits** 15

**Semester 4**

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<td>Fibers I</td>
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<td>ART 255</td>
<td>Introduction to Graphic Design</td>
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<td>ART 256</td>
<td>Introduction to Electronic Art</td>
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<td>ART 260</td>
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<td>ART 270</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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**Total Credits** 16

**Junior**

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<td>Arts and Humanities</td>
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**Total Credits** 15

**Semester 6**

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Major in Art (B.F.A.), Sculpture Concentration

Requirements

Bachelor of Fine Arts Core Courses

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student's concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

In addition to the following, students must complete a concentration in this major.

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<th>Course Title</th>
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<tr>
<td>ART 110</td>
<td>Art History I</td>
<td></td>
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<td>ART 135</td>
<td>Introduction to Drawing</td>
<td></td>
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<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
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<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
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<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
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<td>Arts and Humanities¹</td>
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<td>3B</td>
<td>3</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<td>Mathematics</td>
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Sophomore

<table>
<thead>
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<td>ART 230</td>
<td>Photo Image Making I</td>
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<tr>
<td>ART 240</td>
<td>Pottery I</td>
<td></td>
<td></td>
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<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ART 250</td>
<td>Fibers I</td>
<td></td>
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<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
<td></td>
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<tr>
<td>ART 256</td>
<td>Introduction to Electronic Art</td>
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<td>Total Credits</td>
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</table>
ART 260  Painting I
ART 265  Printmaking I-Intaglio and Relief
ART 270  Sculpture I
ART 235  Intermediate Drawing I

Upper-Division Art History$^3$ 4A,4B

Biological and Physical Sciences 3A
Historical Perspectives 3D
Social and Behavioral Sciences 3C

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
<td>4A,4B</td>
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<td>ART 311</td>
<td>Art of Africa</td>
<td>4A,4B</td>
<td>3</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
<td>3</td>
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<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
<td>3</td>
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<td>ART 315</td>
<td>United States Art 1945-1980</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>ART 317</td>
<td>Native North American Art</td>
<td>4A,4B</td>
<td>3</td>
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<td>ART 410</td>
<td>Greek Art</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4A,4B</td>
<td>3</td>
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<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
<td>4A,4B</td>
<td>3</td>
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<td>ART 417</td>
<td>Roman Art</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
<td>4A,4B</td>
<td>3</td>
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</tbody>
</table>

Select from the list of courses (other than ART 100) in category 3B in the All-University Core Curriculum (AUCC). Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.
Students in the Drawing Concentration may select any three courses from this list. Students in any other concentration must select the course appropriate to their concentration as one of the three courses (ART 256 for Electronic Art, ART 250 for Fibers, ART 255 for Graphic Design; ART 245 for Metalsmithing; ART 260 for Painting, ART 230 for Photo Image Making, ART 240 for Pottery, ART 265 for Printmaking, and ART 270 for Sculpture).

Select six credits of upper-division art history. In order to complete category 4A and 4B of the All-University Core Curriculum (AUCC), at least three credits must be from the Upper-Division Art History list.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Sculpture Concentration**

In addition to the Art (B.F.A.) core courses, the following must be completed:

### Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<td><strong>JUNIOR</strong></td>
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<tr>
<td>ART 370</td>
<td>Sculpture II</td>
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<tr>
<td>ART 371</td>
<td>Sculpture III</td>
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<td><strong>SENIOR</strong></td>
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<td>Sculpture IV</td>
<td>4C</td>
<td>4</td>
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<tr>
<td>ART 471</td>
<td>Sculpture V</td>
<td>4C</td>
<td>4</td>
</tr>
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</table>

**Major Completion Map**

**Distinctive Requirements for Degree Program:** C or better in ART 370, ART 371, ART 470, and ART 471.

**To Declare this Major:**

**Transfer Students:** 2.500 cumulative GPA. Sophomore restriction for ART 270.

**Continuing CSU Students:** 2.500 cumulative GPA.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<tr>
<td>ART 105</td>
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<td>X</td>
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<tr>
<td>ART 110</td>
<td>Art History I</td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 135</td>
<td>Introduction to Drawing</td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>X</td>
<td>1A</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
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</table>

Total Credits: 16

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<tr>
<th>Semester 2</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ART 111</td>
<td>Art History II</td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>X</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>CO 150 must be completed by the end of Semester 2.</td>
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Total Credits: 15

**Sophomore**

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<tr>
<th>Semester 3</th>
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<th>Credits</th>
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<td>ART 212</td>
<td>Art History III</td>
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<td>X</td>
<td>3</td>
</tr>
<tr>
<td>ART 235</td>
<td>Intermediate Drawing I</td>
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<td>X</td>
<td>3</td>
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</tbody>
</table>

Select one course from the following:

<p>| ART 230 | Photo Image Making I |
| ART 240 | Pottery I |
| ART 245 | Metalsmithing and Jewelry I |</p>
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 250 Fibers I</td>
<td>4</td>
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<tr>
<td>ART 255 Introduction to Graphic Design</td>
<td>4</td>
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<tr>
<td>ART 256 Introduction to Electronic Art</td>
<td>4</td>
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<tr>
<td>ART 260 Painting I</td>
<td>4</td>
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<tr>
<td>ART 265 Printmaking I–Intaglio and Relief</td>
<td>4</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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**Total Credits:** 16

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<th>Semester 4</th>
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<tbody>
<tr>
<td>ART 270 Sculpture I</td>
<td>X</td>
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<td>3</td>
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</tbody>
</table>

Select one course from the following not previously taken:

- ART 230 Photo Image Making I
- ART 245 Metalsmithing and Jewelry I
- ART 240 Pottery I
- ART 250 Fibers I
- ART 255 Introduction to Graphic Design
- ART 256 Introduction to Electronic Art
- ART 260 Painting I
- ART 265 Printmaking I–Intaglio and Relief

Upper-Division Art History (AUCC 4A/4B) (See List on Major in ART, BFA Core Requirements Tab) | 4A,4B | 3       |

Biological and Physical Sciences | X 3A | 3       |

Social and Behavioral Sciences | X 3C | 3       |

ART 235 must be completed by the end of Semester 4. | X    |

**Total Credits:** 15

<table>
<thead>
<tr>
<th>Junior</th>
<th>Semester 5</th>
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<tr>
<td>ART 370 Sculpture II</td>
<td>X</td>
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</table>

Advanced Writing | X 2 | 3       |

Arts and Humanities | X 3B | 3       |

Upper-Division Art History (See List on Major in ART, BFA Core Requirements Tab) | X | 3       |

ART Elective | X | 4       |

**Total Credits:** 17

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<th>Semester 6</th>
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<td>ART 371 Sculpture III</td>
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Upper-Division Art Elective | X | 4       |

Upper-Division General Elective | X | 3       |

General Elective | X | 3       |

**Total Credits:** 14

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Upper-Division General Elective | X | 3       |

General Electives | X | 6       |

**Total Credits:** 13

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Upper-Division Art Elective | X | 4       |

Upper-Division General Electives | X | 6       |
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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</table>

**Major in Art, B.A.**

Throughout history, art has been a fundamental language of the human spirit. Visual arts express human experience through an ever-widening range of media and materials, some of which include: oils, acrylics, pastels, charcoal, clay, plaster, steel, bronze, wood, copper, litho stones, and computers. Visual artists create abstract works and images of objects, people, nature, topography, and events. The Department of Art and Art History offers several options of study. The B.F.A. (Bachelor of Fine Arts) degree in studio art and the B.A. (Bachelor of Arts) degree in art history, art education, or studio art are all professional degrees, leading to related art careers.

**Learning Outcomes**

Students will demonstrate:

- Fundamental knowledge and mastery of media and processes necessary to communicate meaning in a work of art.
- Ability to communicate clearly about their own art and the art of others.
- Knowledge about contemporary art and motivation to view and discuss current local, regional, and national exhibitions. Students well versed on contemporary art would:
  a. regularly read reviews of exhibitions in local and national newspapers;
  b. regularly read art periodicals;
  c. attend multiple exhibitions; and
  d. be knowledgeable about contemporary artists in their discipline (i.e., nationally known painters, sculptors, etc.).

**Potential Occupations**

Art graduates possess a number of transferable communication, analytical, and critical thinking skills, and as a result find positions in academia, in addition to roles as freelance artists, graphic designers, art educators, art historians, studio fine artists and as “creatives” in government and industry. Many employers appreciate art majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Participation in internships, cooperative education, and service learning opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Depending on student interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: art appraiser, art director, art therapist, exhibit designer, art critic, jeweler, gallery director, graphic design artist, free lance artist, sculptor, woodworker, welder, foundry worker, studio photographer, technical illustrator, painter, textile designer, weaver, art educator, art historian, art curator, art librarian, art museum educator, web page designer, photo lab technician, art restorer, and master printer.

**Concentrations**

- Art Education Concentration
- Art History Concentration
- Studio Concentration

**Bachelor of Arts, Art Education Concentration**

The Art Education concentration embraces the artist-teacher concept, which allows students to develop a studio concentration while preparing to teach art at the K-12 level. The program is comprehensive, meaning students take course work to prepare them to teach at the elementary and secondary school levels. The Art Education program enjoys good working relationships with school districts in the state of Colorado. Students integrate studio, art history, criticism, and aesthetics as they observe and teach—through a variety of experiences—in the public schools.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu/students/teacher/admissions.aspx), College of Health and Human Sciences section for general information.

Art Education students must maintain a 2.75 cumulative GPA for admission to the Art Education program, eligibility for student teaching placement, and licensure.

**Requirements**

**Effective Fall 2016**

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
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<td>ART 110</td>
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Notes:
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<th>Course Title</th>
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<tbody>
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<td>Two-Dimensional Visual Fundamentals</td>
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<td>ART 170</td>
<td>Three-Dimensional Visual Fundamentals</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
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<td>Mathematics</td>
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<td>1B</td>
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**Sophomore**

<table>
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<tbody>
<tr>
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<tr>
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<td>Select two studio intro courses from the following:</td>
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<td>ART 230</td>
<td>Photo Image Making I</td>
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</tr>
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<td>ART 240</td>
<td>Pottery I</td>
<td></td>
</tr>
<tr>
<td>ART 260</td>
<td>Painting I</td>
<td></td>
</tr>
<tr>
<td>ART 270</td>
<td>Sculpture I</td>
<td></td>
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<tr>
<td></td>
<td>Select two courses from the following:</td>
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<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
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<tr>
<td>ART 250</td>
<td>Fibers I</td>
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</tr>
<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
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<td>EDUC 275</td>
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<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
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<td></td>
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**Junior**

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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
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</tr>
<tr>
<td>ART 240</td>
<td>Pottery I</td>
<td></td>
</tr>
<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
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<td>Fibers I</td>
<td></td>
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<tr>
<td>ART 260</td>
<td>Painting I</td>
<td></td>
</tr>
<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
<td></td>
</tr>
<tr>
<td>ART 270</td>
<td>Sculpture I</td>
<td></td>
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<tr>
<td></td>
<td>Select 3 credits of upper division (300-to 400-level) art history from the following:</td>
<td>3</td>
</tr>
<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
<td>4B</td>
</tr>
<tr>
<td>ART 311</td>
<td>Art of Africa</td>
<td>4B</td>
</tr>
<tr>
<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4B</td>
</tr>
<tr>
<td>ART 314</td>
<td>Women in Art History</td>
<td>4B</td>
</tr>
<tr>
<td>ART 315</td>
<td>United States Art 1945-1980</td>
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<td>ART 316</td>
<td>Art of the Pacific</td>
<td>4B</td>
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<td>ART 317</td>
<td>Native North American Art</td>
<td>4A,4B</td>
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<tr>
<td>ART 410</td>
<td>Greek Art</td>
<td>4B</td>
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<tr>
<td>ART 411</td>
<td>History of Medieval Art</td>
<td>4B</td>
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<tr>
<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4B</td>
</tr>
<tr>
<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4B</td>
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<tr>
<td>ART 415</td>
<td>History of 19th Century European Art</td>
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<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
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<td>ART 417</td>
<td>Roman Art</td>
<td>4B</td>
</tr>
<tr>
<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
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<td>ART 325</td>
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<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td>3</td>
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</tbody>
</table>
Bachelor of Arts, Art Education Concentration

EDUC 350  Instruction I-Individualization/Management  3
EDUC 386  Practicum-Instruction I  1
Advanced Writing  2  3
Studio teaching emphasis  8

Total Credits  32

Senior

ART 326  Art Education Studio  4
EDUC 450  Instruction II-Standards and Assessment  4
EDUC 466  Methods and Assessment in K-12 Art Education  4
EDUC 485A  Student Teaching: Elementary  4A,4C  6
EDUC 485B  Student Teaching: Secondary  4A,4C  6
EDUC 486E  Practicum: Instruction II  1
EDUC 493A  Seminar: Professional Relations  4C  1
Arts and Humanities  3B  3

Total Credits  29

Program Total Credits:  120

1 Select from the list of courses, except ART 100, in category 3B in the All-University Core Curriculum (AUCC).
2 Select eight credits from one upper-division concentration area other than Graphic Design.

Major Completion Map

Distinctive Requirements for Degree Program:
The Art- Art Education concentration requires a 2.75 cumulative CSU GPA, and that students pass the PLACE exam. Admission to the Center for Educator Preparation (CEP) (http://www.cep.chhs.colostate.edu/students/teacher/admissions.aspx) is also required. Fingerprint and background check. A grade of C or better is required in all Art and Education coursework. There are Sophomore level restrictions for ART 230, ART 240 ART 245, ART 255, and ART 256.

To Declare this Major:
Transfer Students: 2.500 cumulative GPA.
Continuing CSU Students: Admission to Center for Educator Preparation

Freshman

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<th>Credits</th>
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<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
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Total Credits  13

Semester 2

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<tr>
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<td>ART 136</td>
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<tr>
<td>Mathematics</td>
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Total Credits  15

Sophomore

Semester 3

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<tr>
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<td>ART 240</td>
<td>Pottery I</td>
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Select one course from the following:

<table>
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<tbody>
<tr>
<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
</tr>
<tr>
<td>ART 250</td>
<td>Fibers I</td>
</tr>
<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
</tr>
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</table>

Biological and Physical Sciences  X  3A  4
Global and Cultural Awareness     X  3E  3

**Total Credits**: 16

### Semester 4

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<td>EDUC 275</td>
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Select one course from the following not previously taken:

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<tr>
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<tbody>
<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
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<tr>
<td>ART 240</td>
<td>Pottery I</td>
</tr>
<tr>
<td>ART 260</td>
<td>Painting I</td>
</tr>
<tr>
<td>ART 270</td>
<td>Sculpture I</td>
</tr>
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</table>

Select one course from the following not previously taken:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
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<td>Metalsmithing and Jewelry I</td>
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<tr>
<td>ART 250</td>
<td>Fibers I</td>
</tr>
<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
</tr>
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</table>

Biological and Physical Sciences  X  3A  3
Historical Perspectives         X  3D  3

**Total Credits**: 15

### Junior

### Semester 5

<table>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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</table>

Advanced Writing                  X  2  3

Select one course from the following not previously taken:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
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<tr>
<td>ART 240</td>
<td>Pottery I</td>
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<td>Fibers I</td>
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<tr>
<td>ART 260</td>
<td>Painting I</td>
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<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
</tr>
<tr>
<td>ART 270</td>
<td>Sculpture I</td>
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</table>

ART History, Upper-Division (AUCC 4B) (See Concentration Requirements Tab)  X  4B  3
Upper-Division Studio - Teaching Emphasis  X  4
EDUC 275 must be completed by the end of Semester 5.  X

ART 311, ART 312, or ART 316 are strongly recommended to meet AUCC 4B requirement.  X

**Total Credits**: 16

### Semester 6

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<tr>
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<td>Educational Technology and Assessment</td>
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<td>Instruction I-Individualization/Management</td>
<td>X</td>
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Select one course from the following not previously taken:

<table>
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<tr>
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</tr>
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<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
</tr>
<tr>
<td>ART 250</td>
<td>Fibers I</td>
</tr>
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</table>
Bachelor of Arts, Art History Concentration

Art History provides a basic preparation in art history for graduate studies; careers in research and teaching at the college level; for positions in museums, libraries, or private collections; or for writing and criticism in the arts. Graduate studies or advanced-level classes are necessary for advancement. In-depth study in a second field allows students to refine their focus.

Requirements

Effective Fall 2016

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>ART 111</td>
<td>Art History II</td>
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</tr>
<tr>
<td>ART 135</td>
<td>Introduction to Drawing</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ART 160</td>
<td>Two-Dimensional Visual Fundamentals</td>
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<tr>
<td>CO 150</td>
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Sophomore

Select one course from the following:

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<tr>
<td>ART 136</td>
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<td>ART 230</td>
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<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
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<td>ART 250</td>
<td>Fibers I</td>
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<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
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<td>ART 256</td>
<td>Introduction to Electronic Art</td>
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<td>History of American Art to 1945</td>
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<td>ART 311</td>
<td>Art of Africa</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
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<td>ART 314</td>
<td>Women in Art History</td>
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<td>ART 412</td>
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<td>History of 19th Century European Art</td>
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<td>History of European Art, 1900 to 1945</td>
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<td>ART 418</td>
<td>Contemporary Artists and Art Critics</td>
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<td>Global and Cultural Awareness</td>
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**Junior**

Select one course from the following not taken elsewhere:

- ART 136 Introduction to Figure Drawing
- ART 230 Photo Image Making I
- ART 240 Pottery I
- ART 245 Metalsmithing and Jewelry I
- ART 250 Fibers I
- ART 255 Introduction to Graphic Design
- ART 256 Introduction to Electronic Art
- ART 260 Painting I
- ART 265 Printmaking I-Intaglio and Relief
- ART 270 Sculpture I

ART *** Upper-Division Art Electives

ART *** Upper-Division Art History

PHIL 318 Aesthetics-Visual Arts

Second Field Courses³

Advanced Writing

Arts and Humanities²

Total Credits

**Senior**

ART 419 Historiography and Methodology of Art History

ART *** Upper-Division Art History

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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
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<td>ART 314</td>
<td>Women in Art History</td>
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<td>Art of the Pacific</td>
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ART 419 Historiography and Methodology of Art History

ART *** Upper-Division Art History
Second Field Courses
Second Field Upper-Division Courses
Elective

Total Credits
Program Total Credits:

1. Transfer students who have taken or transferred in credit for ART 100 may use it in lieu of ART 110.
2. Select any 3B course except ART 100 or any language (L***) course.
3. Complete a minimum of 21 credits of a minor or second major, or 21 credits from the same non-ART subject code. A minimum of 12 credits from the 21 must be upper division (300- to 400-level).
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
C (2.000) or better in Upper-Division Art History courses.

To Declare this Major:
ENTERING FIRST YEAR STUDENTS:
TRANSFER STUDENTS: 2.500 cumulative GPA. Admission to concentration requires competitive portfolio review at second Upper-Division course in concentration.
CONTINUING CSU STUDENTS: 2.500 cumulative GPA. Admission to concentration requires competitive portfolio review at second Upper-Division course in concentration.

Freshman

Semester 1

<table>
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<th>Recommended</th>
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<th>Credits</th>
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<td>Issues and Practices in Art</td>
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<td>3</td>
</tr>
<tr>
<td>ART 135</td>
<td>Introduction to Drawing</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X 1A</td>
<td>3</td>
</tr>
<tr>
<td>L*** Foreign Language</td>
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Semester 2

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<th>AUCC</th>
<th>Credits</th>
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<tr>
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<td>Two-Dimensional Visual Fundamentals</td>
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Sophomore

Semester 3

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<td>ART 212</td>
<td>Art History III</td>
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Semester 4

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<tr>
<td>ART 136</td>
<td>Introduction to Figure Drawing</td>
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<tr>
<td>ART 230</td>
<td>Photo Image Making I</td>
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<td>ART 240</td>
<td>Pottery I</td>
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<td>ART 245</td>
<td>Metalsmithing and Jewelry I</td>
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<tr>
<td>ART 250</td>
<td>Fibers I</td>
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Select one course from the following:
**ART 255** Introduction to Graphic Design  
**ART 256** Introduction to Electronic Art  
**ART 260** Painting I  
**ART 265** Printmaking I-Intaglio and Relief  
**ART 270** Sculpture I  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
Biological and Physical Sciences  
**ART** Upper-Division Art Electives  
**ART 136** Introduction to Figure Drawing  
**ART 230** Photo Image Making I  
**ART 240** Pottery I  
**ART 245** Metalsmithing and Jewelry I  
**ART 250** Fibers I  
**ART 255** Introduction to Graphic Design  
**ART 256** Introduction to Electronic Art  
**ART 260** Painting I  
**ART 265** Printmaking I-Intaglio and Relief  
**ART 270** Sculpture I  
**PHIL 318** Aesthetics-Visual Arts  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
Advanced Writing  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
**ART*** Upper-Division Art Electives  
Second Field Course  
Arts and Humanities  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
**ART*** Upper-Division Art Electives  
Second Field Course  
Upper-Division Second Field Courses  
Elective  

**Junior**  
**Semester 5**  
Select one course from the following not previously taken:  
**ART 136** Introduction to Figure Drawing  
**ART 230** Photo Image Making I  
**ART 240** Pottery I  
**ART 245** Metalsmithing and Jewelry I  
**ART 250** Fibers I  
**ART 255** Introduction to Graphic Design  
**ART 256** Introduction to Electronic Art  
**ART 260** Painting I  
**ART 265** Printmaking I-Intaglio and Relief  
**ART 270** Sculpture I  
**PHIL 318** Aesthetics-Visual Arts  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
Advanced Writing  

**Semester 6**  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
**ART*** Upper-Division Art Electives  
Second Field Course  
Arts and Humanities  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
**ART*** Upper-Division Art Electives  
Second Field Course  
Upper-Division Second Field Courses  
Elective  

**Senior**  
**Semester 7**  
**ART 419** Historiography and Methodology of Art History  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
Second Field Course  
Upper-Division Second Field Courses  

**Semester 8**  
**ART*** Upper-Division Art History (See list of approved courses on Major Requirements Tab)  
Second Field  
Upper-Division Second Field Courses  
Elective
Bachelor of Arts, Studio Concentration

The Studio concentration gives students a liberal education with a focus on one or more of the visual arts. The concentration enables graduates to incorporate their specialty into their careers and life activities. People who are knowledgeable about art may contribute much by supporting community arts activities and teaching others.

Requirements

Effective Fall 2016

A minimum grade of C (2.000) must be achieved in each upper-division art course in the student’s concentration. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

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<tr>
<th>Freshman</th>
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<td>ART 110 Art History I</td>
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<td>ART 111 Art History II</td>
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<td>ART 135 Introduction to Drawing</td>
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<td>ART 136 Introduction to Figure Drawing</td>
<td>3</td>
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<tr>
<td>ART 160 Two-Dimensional Visual Fundamentals</td>
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<td>ART 170 Three-Dimensional Visual Fundamentals</td>
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<td>Global and Cultural Awareness</td>
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<td>ART 235 Intermediate Drawing I</td>
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<td>ART 240 Pottery I</td>
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<tr>
<td>ART 245 Metalsmithing and Jewelry I</td>
<td>3E</td>
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<td>ART 250 Fibers I</td>
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<tr>
<td>ART 255 Introduction to Graphic Design</td>
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<td>ART 256 Introduction to Electronic Art</td>
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<td>ART 260 Painting I</td>
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<td>ART 265 Printmaking I-Intaglio and Relief</td>
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<td>ART 270 Sculpture I</td>
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<td><strong>Upper-Division Art History - Select from list below</strong></td>
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<td><strong>Upper-Division Concentration</strong></td>
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Art Electives  6  
Advanced Writing  2  
Arts and Humanities\textsuperscript{1}  3B  
Historical Perspectives  3D  
Upper-Division General Electives\textsuperscript{3}  3  

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Select four credits from the following in the appropriate concentration:  4

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<td>Advanced Photo Image Making II</td>
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<td>ART 435</td>
<td>Advanced Drawing I</td>
<td>4C</td>
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<td>ART 436</td>
<td>Advanced Drawing II</td>
<td>4C</td>
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<td>ART 440</td>
<td>Pottery IV</td>
<td>3C</td>
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<td>ART 441</td>
<td>Pottery V</td>
<td>4C</td>
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<td>ART 445</td>
<td>Metalsmithing and Jewelry IV</td>
<td>4C</td>
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<td>ART 446</td>
<td>Metalsmithing and Jewelry V</td>
<td>4C</td>
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<td>ART 450</td>
<td>Fibers IV</td>
<td>4C</td>
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<td>ART 451</td>
<td>Fibers V</td>
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<td>ART 460</td>
<td>Advanced Painting I</td>
<td>4C</td>
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<td>Printmaking V-Studio Workshop</td>
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<td>Sculpture IV</td>
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<td>ART 471</td>
<td>Sculpture V</td>
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Upper-Division Art Electives  3  
Non-Art Electives  3  
Upper-Division General Electives\textsuperscript{3}  18  

Total Credits  28  
Program Total Credits:  120  

**Upper-Division Art History Courses**

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<tr>
<td>ART 310</td>
<td>History of American Art to 1945</td>
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<td>ART 311</td>
<td>Art of Africa</td>
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<td>ART 312</td>
<td>History of Pre-Columbian Art</td>
<td>4A,4B</td>
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<td>ART 314</td>
<td>Women in Art History</td>
<td>4A,4B</td>
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<td>ART 315</td>
<td>United States Art 1945-1980</td>
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<td>ART 317</td>
<td>Native North American Art</td>
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<td>ART 410</td>
<td>Greek Art</td>
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<td>ART 411</td>
<td>History of Medieval Art</td>
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<td>ART 412</td>
<td>History of Renaissance Art</td>
<td>4A,4B</td>
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<td>ART 414</td>
<td>History of Baroque and Rococo Art</td>
<td>4A,4B</td>
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<td>ART 415</td>
<td>History of 19th Century European Art</td>
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<td>ART 416</td>
<td>History of European Art, 1900 to 1945</td>
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<tr>
<td>ART 417</td>
<td>Roman Art</td>
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ART 418  
Contemporary Artists and Art Critics  4A,4B

1. Select from the list of courses in category 3B (other than ART 100) in the All-University Core Curriculum (AUCC).
2. Choose eight upper-division credits in one area of concentration in addition to the four credit capstone course.
3. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:** C (2.00) or better in Upper-Division coursework in concentration.

**To Declare this Major:**

**Entering First Year Students:**

Transfer Students: 2.500 cumulative GPA. Admission to concentration requires competitive portfolio review at second Upper-Division course in concentration.

Continuing CSU Students: 2.500 cumulative GPA. Admission to concentration requires competitive portfolio review at second Upper-Division course in concentration.

---

**Freshman**

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<td>Art History I</td>
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<td>ART 135</td>
<td>Introduction to Drawing</td>
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<td>ART 160</td>
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<td>Introduction to Figure Drawing</td>
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<td>ART 170</td>
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<td>Arts and Humanities</td>
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**Sophomore**

**Semester 3**

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<td>Painting I</td>
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<td>Printmaking I-Intaglio and Relief</td>
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**Semester 4**

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<tr>
<td>ART 260</td>
<td>Painting I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ART 265</td>
<td>Printmaking I-Intaglio and Relief</td>
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<tr>
<td>ART 270</td>
<td>Sculpture I</td>
<td></td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>X</td>
<td>3A</td>
<td>3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>X</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Upper-Division Art History</td>
<td></td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>L*** Foreign Language Course</td>
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### Junior

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<tr>
<th>Semester 5</th>
<th>Critical</th>
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<tr>
<td>Advanced Writing</td>
<td>X</td>
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<tr>
<td>Arts and Humanities</td>
<td>X</td>
<td>3B</td>
<td></td>
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<tr>
<td>Upper-Division Studio in Concentration</td>
<td>X</td>
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<tr>
<td>Upper-Division Art History</td>
<td>X</td>
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<tr>
<td>Art Elective</td>
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<tbody>
<tr>
<td>Historical Perspectives</td>
<td>X</td>
<td>3D</td>
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<tr>
<td>Upper-Division Studio in Concentration</td>
<td>X</td>
<td></td>
<td>4</td>
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<tr>
<td>Upper-Division General Elective</td>
<td>X</td>
<td></td>
<td>3</td>
<td></td>
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<tr>
<td>Art Elective</td>
<td>X</td>
<td></td>
<td>3</td>
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### Senior

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<tr>
<th>Semester 7</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>Upper-Division Studio in Concentration</td>
<td>X</td>
<td>4C</td>
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<tr>
<td>Upper-Division General Electives</td>
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<tr>
<td>General Elective</td>
<td>X</td>
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<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Upper-Division Art Elective</td>
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<td>Upper-Division General Electives</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td>X</td>
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<td>Total Credits</td>
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</table>

Program Total Credits: 120

### Master of Fine Arts (M.F.A.)

#### Requirements

**Effective Spring 2015**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 575A</td>
<td>Studio Problems: Painting</td>
<td>9</td>
</tr>
<tr>
<td>ART 575B</td>
<td>Studio Problems: Printmaking</td>
<td></td>
</tr>
<tr>
<td>ART 575C</td>
<td>Studio Problems: Sculpture</td>
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</tr>
</tbody>
</table>

Select one from the following:

- ART 575D: Studio Problems: Fibers
- ART 575E: Studio Problems: Metalsmithing and Jewelry
- ART 575F: Studio Problems: Drawing
- ART 575G: Studio Problems: Graphic Design

Total Credits: 9
ART 675E Studio Problems: Metalsmithing and Jewelry
ART 675F Studio Problems: Drawing
ART 675G Studio Problems: Graphic Design

Select one from the following: 3
ART 695A Independent Study: Painting
ART 695B Independent Study: Printmaking
ART 695C Independent Study: Sculpture
ART 695D Independent Study: Fibers
ART 695E Independent Study: Metalsmithing and Jewelry
ART 695F Independent Study: Drawing
ART 695G Independent Study: Graphic Design
ART 695H Independent Study: Art History

Select one from the following: 4
ART 699A Thesis: Painting
ART 699B Thesis: Printmaking
ART 699C Thesis: Sculpture
ART 699D Thesis: Fibers
ART 699E Thesis: Metalsmithing and Jewelry
ART 699F Thesis: Drawing
ART 699G Thesis: Graphic Design

**Elective Courses**

**Department List Electives (see below)** 12

**Total Credits** 60

A minimum of 60 credits are required to complete this program.

**M.F.A. Department List Electives**

M.F.A. Department List credits support individual studio practice and creative research. Students and advisors determine appropriate courses from, but not limited to, the list below. Students consult with faculty to assess readiness for upper-level courses, to confirm access to advanced courses, and to request overrides.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td><strong>Studio Elective Options:</strong></td>
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<tr>
<td>ART 435</td>
<td>Advanced Drawing I</td>
<td></td>
</tr>
<tr>
<td>ART 436</td>
<td>Advanced Drawing II</td>
<td></td>
</tr>
<tr>
<td>ART 440</td>
<td>Pottery IV</td>
<td></td>
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<tr>
<td>ART 441</td>
<td>Pottery V</td>
<td></td>
</tr>
<tr>
<td>ART 445</td>
<td>Metalsmithing and Jewelry IV</td>
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</tr>
<tr>
<td>ART 446</td>
<td>Metalsmithing and Jewelry V</td>
<td></td>
</tr>
<tr>
<td>ART 450</td>
<td>Fibers IV</td>
<td></td>
</tr>
<tr>
<td>ART 451</td>
<td>Fibers V</td>
<td></td>
</tr>
<tr>
<td>ART 455</td>
<td>Advanced Typography and Design Systems</td>
<td></td>
</tr>
<tr>
<td>ART 456</td>
<td>Advanced Illustration</td>
<td></td>
</tr>
<tr>
<td>ART 460</td>
<td>Advanced Painting I</td>
<td></td>
</tr>
<tr>
<td>ART 461</td>
<td>Advanced Painting II</td>
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<tr>
<td>ART 465</td>
<td>Printmaking IV-Studio Workshop</td>
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<tr>
<td>ART 466</td>
<td>Printmaking V-Studio Workshop</td>
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<tr>
<td>ART 470</td>
<td>Sculpture IV</td>
<td></td>
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<tr>
<td>ART 471</td>
<td>Sculpture V</td>
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<tr>
<td></td>
<td><strong>Other Elective Options in the Department of Art and Art History:</strong></td>
<td></td>
</tr>
<tr>
<td>ART 495A</td>
<td>Independent Study: Painting</td>
<td>8</td>
</tr>
<tr>
<td>ART 495B</td>
<td>Independent Study: Printmaking</td>
<td>8</td>
</tr>
<tr>
<td>ART 495C</td>
<td>Independent Study: Sculpture</td>
<td>1</td>
</tr>
<tr>
<td>ART 495D</td>
<td>Independent Study: Fibers</td>
<td>8</td>
</tr>
<tr>
<td>ART 495E</td>
<td>Independent Study: Metalsmithing and Jewelry</td>
<td>8</td>
</tr>
<tr>
<td>ART 495F</td>
<td>Independent Study: Drawing</td>
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<td>ART 495G</td>
<td>Independent Study: Graphic Design</td>
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<tr>
<td>ART 495H</td>
<td>Independent Study: Art History</td>
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<tr>
<td>ART 495I</td>
<td>Independent Study: Art Education</td>
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<tr>
<td>ART 495J</td>
<td>Independent Study: Pottery</td>
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</tr>
<tr>
<td>ART 495K</td>
<td>Independent Study: Photo Image Making</td>
<td>8</td>
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<tr>
<td>ART 496A</td>
<td>Group Study: Painting</td>
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<tr>
<td>ART 496B</td>
<td>Group Study: Printmaking</td>
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<td>ART 496C</td>
<td>Group Study: Sculpture</td>
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<td>ART 496D</td>
<td>Group Study: Fibers</td>
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</tr>
<tr>
<td>ART 496E</td>
<td>Group Study: Metalsmithing and Jewelry</td>
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<td>ART 496F</td>
<td>Group Study: Drawing</td>
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<tr>
<td>ART 496G</td>
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<td>ART 496H</td>
<td>Group Study: Art History</td>
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</table>

**Studio Seminar Requirements**

ART 696I Group Study: Multiple Media 6

**Required Art History** 6

Select 6 credits from the following: 6

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ART 510A</td>
<td>Advanced Study in Art History: American Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510B</td>
<td>Advanced Study in Art History: African Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510C</td>
<td>Advanced Study in Art History: Pre-Colombian Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510E</td>
<td>Advanced Study in Art History: United States Art Since 1945</td>
<td>7</td>
</tr>
<tr>
<td>ART 510F</td>
<td>Advanced Study in Art History: Greek Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510G</td>
<td>Advanced Study in Art History: Medieval Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510H</td>
<td>Advanced Study in Art History: Renaissance Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510I</td>
<td>Advanced Study in Art History: Baroque and Rococo Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510J</td>
<td>Advanced Study in Art History: 19th-Century European Art</td>
<td>7</td>
</tr>
<tr>
<td>ART 510K</td>
<td>Advanced Study in Art History: 20th Century European Art</td>
<td>7</td>
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<tr>
<td>ART 510M</td>
<td>Advanced Study in Art History: Roman Art</td>
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<tr>
<td>ART 510N</td>
<td>Advanced Study in Art History: Graphic Design</td>
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</tr>
<tr>
<td>ART 510O</td>
<td>Advanced Study in Art History: Women in Art</td>
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<tr>
<td>ART 510P</td>
<td>Advanced Study in Art History: Pacific Art</td>
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<td>ART 695H</td>
<td>Independent Study: Art History</td>
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<td>ART 510Q</td>
<td>Advanced Study in Art History: Contemporary Art and Art Critics</td>
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<tr>
<td>ART 592</td>
<td>Art History Seminar</td>
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</table>

Select a minimum of 12 credits from the following: 12
ART 496I  Group Study: Art Education
ART 496J  Group Study: Pottery
ART 496K  Group Study: Photo Image Making
ART 510A  Advanced Study in Art History: American Art
ART 510B  Advanced Study in Art History: African Art
ART 510C  Advanced Study in Art History: Pre-Columbian Art
ART 510E  Advanced Study in Art History: United States Art Since 1945
ART 510F  Advanced Study in Art History: Greek Art
ART 510G  Advanced Study in Art History: Medieval Art
ART 510H  Advanced Study in Art History: Renaissance Art
ART 510I  Advanced Study in Art History: Baroque and Rococo Art
ART 510J  Advanced Study in Art History: 19th-Century European Art
ART 510K  Advanced Study in Art History: 20th-Century European Art
ART 510M  Advanced Study in Art History: Roman Art
ART 510N  Advanced Study in Art History: Graphic Design
ART 510O  Advanced Study in Art History: Women in Art
ART 510P  Advanced Study in Art History: Pacific Art
ART 684  Supervised College Teaching
ART 695A  Independent Study: Painting
ART 695B  Independent Study: Printmaking
ART 695C  Independent Study: Sculpture
ART 695D  Independent Study: Fibers
ART 695E  Independent Study: Metalsmithing and Jewelry
ART 695F  Independent Study: Drawing
ART 695G  Independent Study: Graphic Design
ART 695H  Independent Study: Art History
ART 696I  Group Study: Multiple Media

Elective Options Outside the Department of Art and Art History:
PHIL 318  Aesthetics-Visual Arts

Out-of-Department Course(s)

Total Credits 12

1. Select a minimum total of 9 credits to be taken in the first year over two semesters, e.g., 4 and 5 credits.
2. Select a minimum total of 9 credits to be taken in the second year over two semesters, e.g., 4 and 5 credits.
3. Select a minimum of 9 credits in student’s area of study. To be completed within student's first four semesters.
4. Select a minimum of 9 credits to be taken during the student’s fifth and sixth semesters, e.g., 4 and 5 credits. Course may be repeated for credit.
5. Students take ART 696I twice: once during the first year and once during the second year.

6. Students may provide their advisors with justification for an alternative course to substitute for one 3-credit art history elective. Students may request advisor approval for an alternative course that would be chosen from among suitable University course offerings.
8. Maximum of 10 credits. Some subtopics may have a prerequisite.
9. Select ART 510 subtopics not taken elsewhere in the program.
10. To be taken in the third year.
11. Select course(s) at 300-level or higher from any department other than Art and Art History within the University for a minimum of 3 credits, with approval of advisor.

Department of Communication Studies

Office in Behavioral Sciences Building, Room A203
(970) 491-6140
communicationstudies.colostate.edu (http://communicationstudies.colostate.edu)

Professor Greg Dickinson, Chair

Undergraduate Majors

Major in Communication Studies

• Speech Teacher Licensure Concentration

Minors

Film Studies Interdisciplinary Minor

The Departments of Communication Studies, English, Ethnic Studies, Foreign Languages and Literatures, and Journalism and Media Communication offer an interdisciplinary minor in Film Studies. See the full listing for the Film Studies interdisciplinary minor in the University-Wide Instructional Programs section.

Media Studies Minor

The Departments of Communication Studies and Journalism and Media Communication offer a minor in Media Studies. See the full listing for the minor in the College of Liberal Arts section.
Graduate Programs in Communication Studies

The graduate program leads to a Master of Arts in Communication Studies. Graduate coursework, as well as a required thesis for the Plan A master’s, enables students to develop expertise in one or a combination of three areas of emphasis:

1. media and visual culture;
2. relational and organizational communication; and/or
3. rhetoric and civic engagement.

In each of these areas, students select course work from among the following topics:

1. contemporary issues in media, media theories, media audiences, media texts, and media industries;
2. communication theories, communication and diversity, interpersonal theories, and discourse and organization; or
3. public address, rhetoric and public affairs, rhetorical theory, rhetorical criticism, rhetoric of everyday life, and feminist theory.

The Plan B master’s provides a Deliberative Practices Specialization with coursework in deliberative theory and practice, a practicum, and an Independent Study serving as the culminating report in lieu of a thesis.

Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Communication Studies (http://communicationstudies.colostate.edu).

Master Programs

- Master of Arts in Communication Studies, Plan A
- Master of Arts in Communication Studies, Plan B, Deliberative Practices Specialization

Courses

Communication Studies (SPCM)

SPCM 100 Communication and Popular Culture (GT-AH1) Credits: 3 (3-0-0)
Course Description: Classical tradition of speech communication, its extension to broadcasting, and integration of both in contemporary culture.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

SPCM 130 Relational and Organizational Communication (GT-SS3) Credits: 3 (2-0-1)
Course Description: Basic communication processes and skills central to relating and organizing in interpersonal, small group, and organizational contexts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SPCM 200 Public Speaking Credits: 3 (3-0-0)
Course Description: Fundamentals of public speaking emphasizing content, organization, delivery, audience response.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 201 Rhetoric in Western Thought (GT-AH3) Credits: 3 (3-0-0)
Course Description: Major concepts of Western rhetoric from Greece to modern times and their relationship to present-day approaches to communication.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

SPCM 207 Public Argumentation Credits: 3 (3-0-0)
Course Description: Key communication principles for democracy, including issue analysis, evidence, reasoning, decision-making, debate, dialogue, and deliberation.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 232 Group Communication Credits: 3 (3-0-0)
Course Description: Principles and methods of group communication emphasizing face-to-face and electronically mediated problem solving and decision making.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 278A Communication Skills: Convention/Meeting Planning Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SPCM 278B Communication Skills: Interviewing  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278C Communication Skills: Film Festivals  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278D Communication Skills: Friendship  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278E Communication Skills: Intercultural Competence  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278F Communication Skills: Virtual Teamwork  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278G Communication Skills: Parliamentary Procedure  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278H Communication Skills: Organizational Training  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278I Communication Skills: Social Media  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 300 Advanced Public Speaking  Credits: 3 (0-0-3)
Course Description: Advanced technique in public speaking; emphasis on argument construction and refutation, style, and manuscript delivery.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 311 Historical Speeches on American Issues  Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflected and affected American issues from colonial period through early 20th century.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 320 Communication--Human Anti-Trafficking  Credits: 3 (3-0-0)
Course Description: Examines historical and contemporary anti human trafficking movements, assessing the communication strategies employed by anti-trafficking advocates and organizations. Assesses the role language plays in shaping societal attitudes toward victims, survivors, and perpetrators of human trafficking.
Prerequisite: SPCM 100 to 499 - at least 3 credits.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 331 Nonverbal Communication  Credits: 3 (3-0-0)
Course Description: Non-language communication; systems and functions of nonverbal communication behaviors.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 332 Interpersonal Communication Skills  Credits: 3 (3-0-0)
Course Description: Analysis, exploration, and skill enhancement strategies for interpersonal communication in friendship, couple, family, and business relationships.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 333 Professional Communication  Credits: 3 (3-0-0)
Course Description: Technological, interpersonal, and ethical dimensions of professional communication, emphasizing interviews, teams, and presentations at work.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
SPCM 334  Co-Cultural Communication  Credits: 3 (3-0-0)
Course Description: Cultural concerns of communication among co-cultures of United States; diversity; self-awareness as cultural imperative for enhanced communication.
Prerequisite: None.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 335  Gender and Communication  Credits: 3 (3-0-0)
Course Description: Analysis and exploration of communication as it relates to gender and women's and men's roles and identities.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 341  Evaluating Contemporary Television  Credits: 3 (3-0-0)
Course Description: Rhetorical standards applied to content, ethical, and artistic aspects of American televised discourse; emphasizing nonentertainment programming.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 342  Critical Media Studies  Credits: 3 (3-0-0)
Course Description: Analysis of communication media; history, structure, regulation, policy, and impact upon society.
Prerequisite: SPCM 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 346  Virtual Culture and Communication  Credits: 3 (2-2-0)
Course Description: Rhetorical theory applied to planning, producing, and evaluating computer-mediated messages.
Prerequisite: SPCM 100 or SPCM 342.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SPCM 346 and SPCM 378.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 347  Visual Communication  Credits: 3 (3-0-0)
Course Description: Media/visual aesthetics and literacy and the symbolic and affective dimensions of the codes, conventions, and formulas of media.
Prerequisite: SPCM 100 or SPCM 342.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 349  Freedom of Speech  Credits: 3 (3-0-0)
Course Description: Historical and philosophical precedents to freedom of speech; development of free speech principles in the U.S.; ethical obligations of speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 350  Evaluating Contemporary Film  Credits: 3 (2-3-0)
Course Description: Theory and development of film criticism; application of critical approaches to modern fiction and nonfiction film.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 354  History and Appreciation of Film  Credits: 3 (2-3-0)
Course Description: Screening and evaluation of landmark fiction and nonfiction films; assessment of cinema as an art form and a social force.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 357  Film and Social Change  Credits: 3 (2-3-0)
Course Description: Ways in which the medium of motion pictures has sparked significant social changes at home and abroad.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 358  Gender and Genre in Film  Credits: 3 (2-3-0)
Course Description: Gender relations in film genres.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 359  Asian American Film Studies  Credits: 3 (2-3-0)
Course Description: The role of motion pictures in shaping perceptions of Asian American culture.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 365  Asians in the U.S. Media  Credits: 3 (2-3-0)
Course Description: Asian representations in the U.S. media from the 19th century to the present.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 367  Visual Communication  Credits: 3 (3-0-0)
Course Description: Media/visual aesthetics and literacy and the symbolic and affective dimensions of the codes, conventions, and formulas of media.
Prerequisite: SPCM 100 or SPCM 342.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 378  Virtual Workplace Communication  Credits: 3 (0-0-3)
Course Description: Interpersonal/organizational dimensions and communicative processes underpinning virtual/remote/distributed workers and workplaces.
Prerequisite: None.
Registration Information: Credit not allowed for both SPCM 378 and SPCM 346. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SPCM 382A Study Abroad: Bridging Cultures--USA-Italy Credits: 3 (3-0-0)
Course Description: Theory, concepts, principles, research methods, and practical skills in the areas of intercultural and cross-cultural communication, construction and negotiation of Italian identity (italianità), and strategies of an effective dialogue with a global mindset. The aim of the course is to transform its participants into culturally aware and skilled global citizens, with the empirical experience of cultural bridging.
Prerequisite: SPCM 200.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Open only to undergraduate students who are invited to assist in teaching selected courses. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 387 Communication Internship Credit: 1 (0-0-1)
Course Description:
Prerequisite: (SPCM 100 or SPCM 342) and (SPCM 200 and SPCM 201 and SPCM 207).
Registration Information: 2.0 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 401 Rhetoric in Social Movements Credits: 3 (3-0-0)
Course Description: Case studies of campaigns and social movements; genesis, leadership, and use of traditional and electronically mediated rhetoric to achieve objectives.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 407 Public Deliberation Credits: 3 (3-0-0)
Course Description: Communication in collaborative decision-making and community problem-solving, examined through the lens of deliberative democracy.
Prerequisite: SPCM 200 and SPCM 207.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 408 Applied Deliberative Techniques Credits: 3 (3-0-0)
Course Description: Skills development and direct experience in convening, facilitating, and reporting public forums tied to Center for Public Deliberation activities.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 409 Communication, Language, and Thought Credits: 3 (3-0-0)
Course Description: Exploration of concepts, principles, and applications of communication theory. Examination of the relationship between communication and thought, and the impact of both on human behavior.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 410 Environmental Discourse Credits: 3 (3-0-0)
Course Description: Environmental communication in advocacy campaigns, media representations of science, encounters with nature, and public policy.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 411 Contemporary Speeches on American Issues Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflect and affect issues, 1930 to present.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 412 Evaluating Contemporary Rhetoric Credits: 3 (3-0-0)
Course Description: Exploration and evaluation of contemporary persuasive communication in order to understand and assess a variety of forms of messages and symbols.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 415 Rhetoric and Civility Credits: 3 (3-0-0)
Course Description: Relationship between rhetoric and civility historically and in contemporary times.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 420 Political Communication Credits: 3 (3-0-0)
Course Description: Rhetoric of political campaigns.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 421 Contemporary Speeches on American Issues Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflect and affect issues, 1930 to present.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 423 Communication in Organizations Credits: 3 (3-0-0)
Course Description: Communication theory and strategy for empowerment of non-supervisory and supervisory personnel.
Prerequisite: None.
Registration Information: Completion of AUCC category 2, Advanced Writing; minimum of 30 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
SPCM 434  Intercultural Communication  Credits: 3 (3-0-0)
Course Description: Cultural influences on communication between people of different nations; communication rules/norms in specific cultures, cultural adaptation.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 436  Conflict Management and Communication  Credits: 3 (3-0-0)
Course Description: Theories and principles of communication in conflict management; application to conflict resolution situations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 437  Studies in Persuasion  Credits: 3 (3-0-0)
Course Description: Rhetorical and behavioral theories of persuasion applied to persuasive practice in public and interpersonal arenas of social influence.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 454  Chicano/a Film and Video  Credits: 3 (2-2-0)
Also Offered As: ETST 454.
Course Description: Emergence of Chicano/a cinema from a place of displacement, resistance, and affirmation found in contemporary Chicano/a film.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SPCM 454 and ETST 454.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 455  Narrative Fiction Film as a Liberal Art  Credits: 3 (2-3-0)
Also Offered As: LB 455.
Course Description: Narrative fiction film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SPCM 455 and LB 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 479  Communication Studies Capstone  Credits: 3 (3-0-0)
Course Description: Synthesis of central issues in Communication Studies; examination of their relevance to students' professional, personal, and civic endeavors.
Prerequisite: SPCM 100 and SPCM 201 and SPCM 207 and SPCM 130.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Seniors in Communication Studies major only
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 482A  Study Abroad: Cinematic Rome  Credits: 3 (3-0-0)
Course Description: Evaluate and discuss ten primary films, along with excerpts from a number of others. Topics: Images of Ancient Rome; Italian Fascism and Its Memory; Italian Neorealism; Images of "Americans" in Rome, and Rome in America; Fellini's Rome; and Urban Angst, Roman Style. Analyze how Rome functions as a "character" in the movies, the artistic representations of Roman monuments and streetscapes, and the rhetorical functions of Italian cinema.
Prerequisite: None.
Registration Information: Must have concurrent registration in SPCM 382A. Completion of AUCC Category 2.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 486  Practicum  Credits: Var[1-18] (0-0-0)
Course Description: Directed experience of communication techniques and procedures in the community with periodic faculty consultation.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 508  Deliberative Theory and Practice  Credits: 3 (0-0-3)
Course Description: Survey of current theory and practice connected to deliberative democracy.
Prerequisite: SPCM 408.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 511  Topics in Public Address  Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Registration Information: Graduate standing with 12 additional 300- and 400-level credits in communication studies, history, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 538  Communicating in the Health Clinic  Credits: 3 (3-0-0)
Course Description: Organizational, interpersonal, and intercultural dimensions of communicating in public health clinical settings.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SPCM 540  Rhetoric, Race, and Identity  Credits: 3 (3-0-0)  
Also Offered As: ETST 540.  
Course Description: Critical race theory and its relevance to rhetorical studies.  
Prerequisite: SPCM 434 and SPCM 300 to 481 - at least 12 credits.  
Registration Information: Credit not allowed for both SPCM 540 and ETST 540.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 570  Instructional Communication Theory and Practice  Credits: 3 (0-0-3)  
Course Description: Communication theory and research in instructional contexts. Designed for current or prospective teachers.  
Prerequisite: None.  
Registration Information: Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 592  Seminar-Topics in Speech Communication  Credits: 3 (0-0-3)  
Course Description: Theories of communication in development, maintenance, and deterioration of friendship, couple, family, group, and business relationships.  
Prerequisite: SPCM 311 or SPCM 411; 12 additional credits of 300-400 level in Communication Studies, History, or English.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing can substitute for 300-400 level credits.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 601  History of Rhetorical Theory  Credits: 3 (3-0-0)  
Course Description: Rhetorical theories and theorists from the classical period to the present.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Fifteen 300- and 400-level credits in communication studies and/or English.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

SPCM 604  Rhetoric of Everyday Life  Credits: 3 (3-0-0)  
Course Description: Contemporary theories of rhetoric and of everyday life.  
Prerequisite: SPCM 412 and SPCM 300 to 400 - at least 12 credits.  
Restriction: Must be a: Graduate.  
Registration Information: Graduate standing can substitute for 300-400 SPCM credits.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 611  Topics in Public Address  Credits: 3 (3-0-0)  
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.  
Prerequisite: SPCM 311 or SPCM 411.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing can substitute for SPCM 311 or SPCM 411; 12 additional credits of 300-400 level in Communication Studies, History, or English.  
Term Offered: Fall (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 612  Rhetorical Criticism  Credits: 3 (3-0-0)  
Course Description: Traditional and contemporary methods for analyzing persuasive discourse.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Fifteen credits of 300-400 level communication studies or journalism.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 620  Rhetoric and Public Affairs  Credits: 3 (0-0-3)  
Course Description: Rhetoric's role in contemporary politics and civil society.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to graduate school.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 623  Feminist Theories of Discourse  Credits: 3 (0-0-3)  
Course Description: Exploration and evaluation of contemporary feminist theories of rhetoric and discourse.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to graduate school.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 632  Theories of Interpersonal Communication  Credits: 3 (0-0-3)  
Course Description: Theories of communication in development, maintenance, and deterioration of friendship, couple, family, group, and business relationships.  
Prerequisite: None.  
Restriction: Must be a: Graduate.  
Registration Information: Admission to graduate school.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

SPCM 633  Discourse, Work, and Organization  Credits: 3 (0-0-3)  
Course Description: How organizing processes and discursive practices create, maintain, and destroy diverse forms of work in society.  
Prerequisite: None.  
Restriction: Must be a: Graduate.  
Registration Information: Admission to graduate school.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
SPCM 648  Media Texts Credits: 3 (3-0-0)
Course Description: Practical and theoretical implications for criticism in treating media products as texts; various approaches to textual or discourse analysis.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 649  Media Audiences Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues concerning how audiences use and interpret media.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 650  Contemporary Issues in Media Credits: 3 (0-0-3)
Course Description: Ever-changing media culture and landscape and how it affects personal, professional, and public lives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to communication studies master's program.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 654  Communication and Cultural Diversity Credits: 3 (0-0-3)
Course Description: Ethnographic approach to communication issues and concerns in a global context.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to graduate school.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 659  Media Theory Credits: 3 (3-0-0)
Course Description: Examination of communication philosophies and perspectives; analysis of modern theories of face-to-face communication.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or fifteen 300-400 level credits in Communication Studies and/or English.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 665  Media Industries Credits: 3 (3-0-0)
Course Description: Political economy of the media both in the U.S. and globally, including how the media system operates and with what effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 666  Practicum Credits: Var[1-18] (0-0-0)
Course Description: Direction of communication studies fieldwork connected to the CSU Center for Public Deliberation under professional supervision.
Prerequisite: SPCM 408 and SPCM 508, may be taken concurrently.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 667  Speech Communication Pedagogy Credits: 3 (3-0-0)
Course Description: Instructional practices and theories in speech.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to communication studies master's program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Major in Communication Studies

Communication Studies majors receive a broad-based, liberal arts education, designed to equip them for the challenges of the 21st century, the need to adapt to a rapidly changing workplace, and the likelihood of more than one career. The major encompasses many facets of media and visual culture, relational and organizational communication, and rhetoric and civic engagement. Along with courses in communication studies, the major requires courses in the arts and humanities, the social sciences, and history, and a minor or second major.

The department’s goals for undergraduate majors include helping students to achieve an outstanding education in communication studies, to further their knowledge and understanding of human communication, and to provide leadership in communication activities. In so doing, we
hope to help students prepare for successful careers, the duties of citizenship, and productive and rewarding lives.

Learning Outcomes

Students will demonstrate:

• **Totality**: Students will be able to demonstrate a comprehensive understanding of the Communication Studies discipline. They will be able to discuss the central topics in the field related to history, theory, and research. Students’ knowledge of the field will also span several contexts of communication scholarship, including media and visual culture, relational and organizational communication, and rhetoric and civic engagement.

• **Synthesis**: In addition to having a comprehensive understanding of the foundational concepts, theories and research domains in the Communication Studies discipline, students will be able to integrate what they have learned in these areas and apply their knowledge to address contemporary issues salient to their personal, professional, and civic lives.

• **Skillfulness**: Central to the Communication Studies discipline is the development of strong oral and written skills. Students will be able to construct and deliver high-quality, evidence-based arguments tailored to specific audiences. Additionally, students will be able to thoughtfully and ethically critique the oral and written work of their peers (as well as communicators in other professional and public settings).

Potential Occupations

The Communication Studies major, like many liberal arts majors, provides students with a broad academic background suitable for a variety of jobs in the public and private sectors. Majors are trained to think independently and critically, communicate effectively, and function in a multicultural world. Employers appreciate Communication Studies majors for their multiple skills and their ability to adapt to a variety of tasks and work environments.

Many majors find employment in public relations/marketing, politics, sales, human relations, government, business management, convention and meeting planning, education, and computer-mediated communication. Some students move on to graduate work in communication studies and to post-graduate study in law and theology.

Career opportunities include, but are not limited to employee relations specialist, employment counselor, human resource consultant, industrial relations representative, public relations specialist, labor relations consultant, training director, vocational rehabilitation counselor, advance agent, business communicator, equal opportunity representative, foreign service officer, cooperative extension service worker, politician, lobbyist, speechwriter, press agent, literary agent, interviewer, sales representative, scriptwriter, lawyer, teacher.

Internships are available to Communication Studies majors and are highly recommended to enhance practical training and development. Graduates who seek advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Concentrations

• Speech Teacher Licensure Concentration

Requirements

Effective Fall 2014

Freshman

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<td>Communication and Popular Culture (GT-AH1)</td>
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<td>Relational and Organizational Communication (GT-SS3)</td>
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Sophomore

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<td>Total Credits</td>
<td></td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>
Junior

Minor or Interdisciplinary Minor 5 15
Communication Studies Electives 6 15

Total Credits 30

Senior

Select one course from the following: 3

- SPCM 311 Historical Speeches on American Issues 4A,4B
- SPCM 341 Evaluating Contemporary Television 4A,4B
- SPCM 342 Critical Media Studies 4A,4B
- SPCM 350 Evaluating Contemporary Film 4A,4B
- SPCM 354 History and Appreciation of Film 4A,4B
- SPCM 411 Contemporary Speeches on American Issues 4A,4B
- SPCM 412 Evaluating Contemporary Rhetoric 4A,4B
- SPCM 415 Rhetoric and Civility 4A,4B
- SPCM 420 Political Communication 4A,4B
- SPCM 434 Intercultural Communication 4A,4B
- SPCM 479 Communication Studies Capstone 4C 3

Minor or Interdisciplinary Minor 5 6
Communication Studies Electives 6 9
Electives 7 8

Total Credits 29

Program Total Credits: 120

1. Select one course with the subject code of HIST from the list of courses in All-University Core Curriculum (AUCC) 3D.
2. Select six credits from the following subject codes: ART, D, E, ETST, L**, MU, PHIL, TH, or WS. No more than one WS course can be counted toward the completion of this requirement.
3. Select six additional credits from courses with a HIST subject code.
4. Select a total of six credits from the following subject codes: ANTH, ECON, ETST, HIST, JTC, POLS, PSY, SOC, or WS. No more than one WS course can be counted toward the completion of this requirement.
5. Students must complete a university approved minor or interdisciplinary minor.
6. Select a total of 24 credits of SPCM subject code courses excluding SPCM 479 and SPCM 495. Students may count up to 3 credits total, in any combination (1 credit maximum per semester, per class), of the following courses toward Communication Studies electives: SPCM 278A-SPCM 278G; SPCM 384; SPCM 387; and SPCM 486.
7. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td></td>
<td>1A</td>
<td>3</td>
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<tr>
<td>SPCM 100</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
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Total Credits 15

<table>
<thead>
<tr>
<th>Semester 2</th>
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<th>Credits</th>
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<tr>
<td>SPCM 130</td>
<td></td>
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<td>3C</td>
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<tr>
<td>SPCM 200</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
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</table>

Program Total Credits: 120
Elective 3
CO 150 must be completed on the end of Semester 2. X

| Total Credits | 16 |

**Sophomore**

**Semester 3**  

<table>
<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>SPCM 201</td>
<td>Rhetoric in Western Thought (GT-AH3)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Additional Arts and Humanities (See allowable subject codes on Concentration Requirements Tab)</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>Additional History (See allowable subject codes on Concentration Requirements Tab)</td>
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</tr>
<tr>
<td>Additional Social and Behavioral Science (See allowable subject codes on Concentration Requirements Tab)</td>
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| Total Credits | 15 |

**Semester 4**  

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<tbody>
<tr>
<td>SPCM 207</td>
<td>Public Argumentation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Additional Arts and Humanities (See allowable subject codes on Concentration Requirements Tab)</td>
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<tr>
<td>Additional History (See allowable subject codes on Concentration Requirements Tab)</td>
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<td></td>
</tr>
<tr>
<td>Additional Social and Behavioral Science (See allowable subject codes on Concentration Requirements Tab)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 3A (Biological and Physical Sciences), AUCC 3E (Global and Cultural Awareness), AUCC 3D (Historical Perspectives) must be completed by the end of Semester 4.</td>
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| Total Credits | 15 |

**Junior**

**Semester 5**  

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<tr>
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<tr>
<td>Minor or Interdisciplinary Minor Courses</td>
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</table>

| Total Credits | 15 |

**Semester 6**  

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<tbody>
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<td></td>
<td></td>
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<tr>
<td>Minor or Interdisciplinary Minor Courses</td>
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</tr>
</tbody>
</table>

| Total Credits | 15 |

**Senior**

**Semester 7**  

<table>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
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<td>Select one course from the following:</td>
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<td></td>
</tr>
<tr>
<td>SPCM 311</td>
<td>Historical Speeches on American Issues</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 341</td>
<td>Evaluating Contemporary Television</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 342</td>
<td>Critical Media Studies</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 350</td>
<td>Evaluating Contemporary Film</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 354</td>
<td>History and Appreciation of Film</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 411</td>
<td>Contemporary Speeches on American Issues</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 412</td>
<td>Evaluating Contemporary Rhetoric</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 415</td>
<td>Rhetoric and Civility</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 420</td>
<td>Political Communication</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 434</td>
<td>Intercultural Communication</td>
<td>X</td>
<td>4A,4B</td>
</tr>
</tbody>
</table>

| SPCM*** | 5 |
| Minor or Interdisciplinary Minor Course | 3 |
| Electives | 4 |
AUCC 2 (Advanced Writing), SPCM 100, SPCM 130, SPCM 200, SPCM 201, SPCM 207 must be completed by the end of Semester 7.

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>SPCM 479 Communication Studies Capstone</td>
<td>X</td>
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<td>4C</td>
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<tr>
<td>SPCM***</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Minor or Interdisciplinary Minor Course</td>
<td>X</td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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<td></td>
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<td>X</td>
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Total Credits: 15

### Program Total Credits:

120

---

**Major in Communication Studies, Speech Teacher Licensure Concentration**

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and the College of Health and Human Sciences for general information.

### Requirements

#### Effective Spring 2014

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>SPCM 100 Communication and Popular Culture (GT-AH1)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 200 Public Speaking</td>
<td>2A</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
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<td>7</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
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<td>3</td>
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<tr>
<td>Electives</td>
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</table>

Total Credits: 30

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDUC 275 Schooling in the United States (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 201 Rhetoric in Western Thought (GT-AH3)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 207 Public Argumentation</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Select two courses from the following:</td>
<td></td>
<td>6</td>
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<tr>
<td>SPCM 331 Nonverbal Communication</td>
<td></td>
<td></td>
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<tr>
<td>SPCM 332 Interpersonal Communication Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPCM 436 Conflict Management and Communication</td>
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</tr>
<tr>
<td>Additional Endorsement Area Electives</td>
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</table>

Total Credits: 30

**Junior**

Select one course from the following:

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td></td>
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<tr>
<td>CO 301B Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>2</td>
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<tr>
<td>CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>CO 301D Writing in the Disciplines: Education (GT-CO3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>EDUC 331 Educational Technology and Assessment</td>
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<td>2</td>
</tr>
</tbody>
</table>
**Major in Communication Studies, Speech Teacher Licensure Concentration**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
<td>1</td>
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<tr>
<td>EDUC 463</td>
<td>Methods in Teaching Language Arts</td>
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Select one from the following:

<table>
<thead>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SPCM 300</td>
<td>Advanced Public Speaking</td>
<td>3</td>
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<tr>
<td>SPCM 333</td>
<td>Professional Communication</td>
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Select one course from the following:

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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SPCM 341</td>
<td>Evaluating Contemporary Television</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 342</td>
<td>Critical Media Studies</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 350</td>
<td>Evaluating Contemporary Film</td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 354</td>
<td>History and Appreciation of Film</td>
<td>4A,4B</td>
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Select one from the following:

<table>
<thead>
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<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>SPCM 334</td>
<td>Co-Cultural Communication</td>
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<tr>
<td>SPCM 434</td>
<td>Intercultural Communication</td>
<td>4A,4B</td>
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**Additional Endorsement Area Elective**

<table>
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<th></th>
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<tbody>
<tr>
<td></td>
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**Total Credits** 31

---

**Senior**

<table>
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<tbody>
<tr>
<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
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<td>EDUC 485B</td>
<td>Student Teaching: Secondary</td>
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<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
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<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
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Select two courses from the following:

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<td>SPCM 407</td>
<td>Public Deliberation</td>
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<td>SPCM 433</td>
<td>Communication in Organizations</td>
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Select one course from the following:

<table>
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<tr>
<td>SPCM 357</td>
<td>Film and Social Change</td>
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<td>SPCM 401</td>
<td>Rhetoric in Social Movements</td>
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<td>SPCM 412</td>
<td>Evaluating Contemporary Rhetoric</td>
<td>4A,4B</td>
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<tr>
<td>SPCM 420</td>
<td>Political Communication</td>
<td>4A,4B</td>
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<tr>
<td>SPCM 431</td>
<td>Communication, Language, and Thought</td>
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<td>SPCM 437</td>
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<tr>
<td>SPCM 479</td>
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</table>

**Total Credits** 29

---

Can be double-counted as a major requirement.

Twenty-one (21) elective credits should apply toward student’s additional endorsement area. Consult advisor and the Colorado Department of Education website for the list of appropriate courses.

---

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

Twenty-one (21) elective credits should apply toward student’s additional endorsement area. Consult advisor and the Colorado Department of Education website for the list of appropriate courses.

---

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>SPCM 100</td>
<td>Communication and Popular Culture (GT-AH1)</td>
<td>3B</td>
<td></td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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## Elective

Total Credits | 3
---|---

### Semester 2

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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
<td>1B</td>
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</tr>
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<td></td>
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</table>

CO 150 must be completed by the end of Semester 2.

Total Credits | 15
---|---

## Sophomore

### Semester 3

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<th>Recommended</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>X</td>
<td>3C</td>
</tr>
<tr>
<td>SPCM 201</td>
<td>Rhetoric in Western Thought (GT-AH3)</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Additional Endorsement Area Electives</td>
<td></td>
<td></td>
<td>9</td>
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</tbody>
</table>

Total Credits | 15
---|---

### Semester 4

<table>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPCM 207</td>
<td>Public Argumentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select two courses from the following:</td>
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<td></td>
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</tr>
<tr>
<td>SPCM 331</td>
<td>Nonverbal Communication</td>
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<td></td>
</tr>
<tr>
<td>SPCM 332</td>
<td>Interpersonal Communication Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPCM 436</td>
<td>Conflict Management and Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Endorsement Area Electives</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>AUCC 3A (Biological and Physical Sciences), AUCC 3E (Global and Cultural Awareness), AUCC 3D (Historical Perspectives), SPCM 200 must be completed by the end of Semester 4.</td>
<td>X</td>
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</tbody>
</table>

Total Credits | 15
---|---

## Junior

### Semester 5

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
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<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
<td></td>
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<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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<tr>
<td>Select one course from the following:</td>
<td></td>
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<tr>
<td>SPCM 300</td>
<td>Advanced Public Speaking</td>
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<tr>
<td>SPCM 333</td>
<td>Professional Communication</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>SPCM 341</td>
<td>Evaluating Contemporary Television</td>
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<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 342</td>
<td>Critical Media Studies</td>
<td></td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 350</td>
<td>Evaluating Contemporary Film</td>
<td></td>
<td>4A,4B</td>
</tr>
<tr>
<td>SPCM 354</td>
<td>History and Appreciation of Film</td>
<td></td>
<td>4A,4B</td>
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<tr>
<td>Additional Endorsement Area Elective</td>
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<tr>
<td>SPCM 100 must be completed by the end of Semester 5.</td>
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Total Credits | 15
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### Semester 6

<table>
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<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td>X</td>
<td>2</td>
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<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>X</td>
<td>3</td>
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<tr>
<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
<td>X</td>
<td>1</td>
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<td>EDUC 463</td>
<td>Methods in Teaching Language Arts</td>
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<tr>
<td>Select one course from the following:</td>
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**Master of Arts in Communication Studies, Plan A**

**Requirements**

**Effective Fall 2008**

### First Year

#### Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SPCM 601</td>
<td>History of Rhetorical Theory</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 646</td>
<td>Media Theory</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 675</td>
<td>Speech Communication Pedagogy</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 692</td>
<td>Seminar</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
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<td><strong>Total Credits</strong></td>
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#### Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SPCM 612</td>
<td>Rhetorical Criticism</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 638</td>
<td>Communication Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 684</td>
<td>Supervised College Teaching</td>
<td>3</td>
</tr>
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<td>Elective</td>
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<td><strong>Total Credits</strong></td>
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### Second Year

#### Fall

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>SPCM 692</td>
<td>Seminar</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td></td>
<td>3-6</td>
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<td><strong>Total Credits</strong></td>
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#### Spring

<table>
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<th>Course</th>
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<tr>
<td>SPCM 699</td>
<td>Thesis</td>
<td>3</td>
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<tr>
<td>Elective</td>
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<td><strong>Total Credits</strong></td>
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<td><strong>3-6</strong></td>
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**Program Total Credits:**

<table>
<thead>
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<th>Electives</th>
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<tr>
<td><strong>Total Credits</strong></td>
<td><strong>12-15</strong></td>
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</table>

A minimum of 45 credits are required to complete this program.

---

1. Students who are not serving as teaching assistants are not required to take SPCM 675 or SPCM 684. Graduate students are expected to complete a minimum of 27 credits in coursework other than SPCM 684, SPCM 692, or SPCM 699.

   Only one course from outside the department may count toward that 27 credits.

   Only one course at the 300- or 400-level may count toward that 27 credits.
Master of Arts in Communication Studies, Plan B, Deliberative Practices Specialization

Requirements
Effective Fall 2013

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>SPCM 408</td>
<td>Applied Deliberative Techniques</td>
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<tr>
<td>SPCM 508</td>
<td>Deliberative Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 601</td>
<td>History of Rhetorical Theory</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 612</td>
<td>Rhetorical Criticism</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 638</td>
<td>Communication Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 646</td>
<td>Media Theory</td>
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<tr>
<td>SPCM 686</td>
<td>Practicum</td>
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<td>SPCM 692</td>
<td>Seminar</td>
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<td>SPCM 695</td>
<td>Independent Study ¹</td>
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Select 12 credits from the following: ²

<table>
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<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>SPCM 538</td>
<td>Communicating in the Health Clinic</td>
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<tr>
<td>SPCM 540</td>
<td>Rhetoric, Race, and Identity</td>
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<tr>
<td>SPCM 604</td>
<td>Rhetoric of Everyday Life</td>
<td></td>
</tr>
<tr>
<td>SPCM 611</td>
<td>Topics in Public Address</td>
<td></td>
</tr>
<tr>
<td>SPCM 620</td>
<td>Rhetoric and Public Affairs</td>
<td></td>
</tr>
<tr>
<td>SPCM 623</td>
<td>Feminist Theories of Discourse</td>
<td></td>
</tr>
<tr>
<td>SPCM 632</td>
<td>Theories of Interpersonal Communication</td>
<td></td>
</tr>
<tr>
<td>SPCM 633</td>
<td>Discourse, Work, and Organization</td>
<td></td>
</tr>
<tr>
<td>SPCM 634</td>
<td>Communication and Cultural Diversity</td>
<td></td>
</tr>
<tr>
<td>SPCM 639</td>
<td>Communication Theory</td>
<td></td>
</tr>
<tr>
<td>SPCM 647</td>
<td>Media Industries</td>
<td></td>
</tr>
<tr>
<td>SPCM 648</td>
<td>Media Texts</td>
<td></td>
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<tr>
<td>SPCM 649</td>
<td>Media Audiences</td>
<td></td>
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<tr>
<td>SPCM 650</td>
<td>Contemporary Issues in Media</td>
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<tr>
<td></td>
<td>Out-of-department graduate course</td>
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</table>

Total Credits 39

A minimum of 39 credits are required to complete this program.

¹ Students must complete a deliberative practices project in SPCM 695. Project will be based on Center for Public Deliberation program.

² All credits must be taken at the graduate level (500- or 600-level). A minimum of 9 credits must be SPCM subject code courses. 3 credits may be taken from an outside department.

Department of Economics

The social science concerned with how people and institutions make choices under conditions of scarcity.

Office in Clark Building, Room C306
(970) 491-6324
economics.colostate.edu (http://economics.colostate.edu)

Professor Alexandra Bernasek, Chair
Professor Nancy Jianakoplos, Undergraduate Coordinator
Professor Anita Pena, Graduate Coordinator

Undergraduate
Majors
• Major in Economics

Minors
• Minor in Economics

Graduate
Graduate Programs in Economics
Programs lead to the degrees of Master of Arts and Doctor of Philosophy. Five primary areas of study are presently emphasized: international economics, public economics, political economy, environmental economics, and regional economics. Core requirements include micro, macro, and heterodox theory, as well as history of economic thought and applied econometrics.

More information is available at the Graduate and Professional Bulletin.

Master Programs
• Master of Arts in Economics, Plan A
• Master of Arts in Economics, Plan B, Technical Paper Option

Ph.D.
• Ph.D. in Economics
Courses

Economics (ECON)

ECON 101 Economics of Social Issues (GT-SS1) Credits: 3 (3-0-0)
Course Description: Economic analysis of poverty, crime, education, and other social issues. Basics of micro, macro, and political economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 202 Principles of Microeconomics (GT-SS1) Credits: 3 (2-0-1)
Course Description: Introduction to decision-making by households, firms, and government, and resulting allocation of resources through markets.
Prerequisite: MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ECON 202 and AREC 202. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 204 Principles of Macroeconomics (GT-SS1) Credits: 3 (2-0-1)
Course Description: Determinants of national output, employment, and price level; inflation and unemployment; fiscal and monetary policy.
Prerequisite: (MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160) and (ECON 202 or AREC 202).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 315 Money and Banking Credits: 3 (3-0-0)
Course Description: Monetary theory and policy; description of financial institutions and markets.
Prerequisite: MATH 160.
Terms Offered: Spring, Summer (odd years).
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 317 Population Economics Credits: 3 (3-0-0)
Course Description: Economics analysis of population issues.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 202 Economics of Public Finance Credits: 3 (3-0-0)
Course Description: Impact of taxes, government expenditures on allocation of resources, distribution of income; evaluation of government expenditure program, tax policies.
Prerequisite: ECON 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 325 Health Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of health care markets, health insurance markets, and public policy regarding health care.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 327 Law and Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of the common law.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 332 International Political Economy Credits: 3 (3-0-0)
Also Offered As: POLS 332.
Course Description: Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite: (ECON 202 or AREC 202) and (POLS 232).
Registration Information: Credit not allowed for both ECON 332 and POLS 332.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 335 Introduction to Econometrics Credits: 3 (3-0-0)
Also Offered As: AREC 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (STAT 201 or STAT 204 or STAT 301) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 340 Introduction to Economics of Natural Resources Credits: 3 (3-0-0)
Also Offered As: AREC 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Credit not allowed for both ECON 340 and AREC 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 344 Economics of Energy Resources Credits: 3 (3-0-0)
Course Description: Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)
Also Offered As: AREC 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Credit not allowed for both ECON 346 and AREC 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 370 Comparative Economic Systems Credits: 3 (3-0-0)
Course Description: Place of the economy in different societies; nature and evolution of capitalism; crisis of command economies and capitalist restoration.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 372 History of Economic Institutions and Thought Credits: 3 (3-0-0)
Course Description: Origins and development of capitalist institutions including contemporary issues of alienation, loss of community, and changing values.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 376 Marxist Economic Thought Credits: 3 (3-0-0)
Course Description: Marxist critique of capitalism and orthodox economics in both its original 19th century and contemporary settings.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 379 Economic History of the United States Credits: 3 (3-0-0)
Also Offered As: HIST 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: ECON 101 or ECON 202 or AREC 202 or any 2 courses in American history. Credit not allowed for both ECON 379 and HIST 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 404 Macroeconomic Policy Credits: 3 (3-0-0)
Course Description: Alternative macroeconomic policies, policy coordination; application to current macroeconomic problems, policies, proposals.
Prerequisite: ECON 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 410 Labor Economics Credits: 3 (3-0-0)
Course Description: Capital/labor relationship; supply, demand of labor; wage determination; role of unions; unemployment and instability; structure of modern working class.
Prerequisite: ECON 306.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 435 Economic Forecasting Credits: 3 (3-0-0)
Course Description: Theory and techniques used in economic forecasting as practiced by economists in industry, government, and academic life.
Prerequisite: (ECON 204) and (ECON 335 or AREC 335 or STAT 340).
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 440 Economics of International Trade and Policy Credits: 3 (3-0-0)
Course Description: Theory of international trade; payments, commercial policies, and economic integration.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 442 Economics of International Finance and Policy Credits: 3 (3-0-0)
Course Description: Balance of payments, adjustment mechanisms, and international monetary systems.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 460 Economic Development Credits: 3 (3-0-0)
Course Description: Economic problems of underdeveloped nations.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 463 Regional Economics Credits: 3 (3-0-0)
Course Description: Introduction to economic importance of location for firms, consumers, and policy makers. Basic tools, applications, and student research.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 474 Recent Economic Thought Credits: 3 (3-0-0)
Course Description: Nontraditional schools of economic thought, such as institutionalism and neo-Marxism, that critique neoclassical economic theory.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assistance in teaching introductory economics courses.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 492 Seminar Credits: 3 (0-0-3)
Course Description: Summarizes, discusses, and applies issues and policies chosen by the instructor. Emphasis on student participation, discussion, and research.
Prerequisite: (AREC 335, may be taken concurrently or ECON 335, may be taken concurrently) and (ECON 304, may be taken concurrently and ECON 306, may be taken concurrently).
Restriction: .
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 501 Quantitative Methods for Economists Credits: 3 (3-0-0)
Course Description: Quantitative methods essential for graduate study in economics; functional forms, optimization, matrix methods, topological modeling.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 504 Applied Macroeconomics Credits: 3 (3-0-0)
Course Description: Application of macroeconomic models to economic growth, economic fluctuations, and policy analysis.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 505 History of Economic Thought Credits: 3 (3-0-0)
Course Description: History of economic thought as a foundation for studying economic theory.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 506 Applied Microeconomic Theory Credits: 3 (3-0-0)
Also Offered As: AREC 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 506 and AREC 506.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 510 Labor Market Analysis Credits: 3 (3-0-0)
Course Description: Determination of wages and employment. Focus on theoretical and applied controversies.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 515 Financial Institutions-Structure/Regulation Credits: 3 (3-0-0)
Course Description: Regulation of financial institutions in the U.S., international banking and international financial institutions, and financial modernization.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 520 Public Economics I Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of tax policy in terms of efficiency and equity.
Prerequisite: ECON 506 or AREC 506 or ECON 606 or AREC 606.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 530 Methodology of Economic Research Credits: 3 (3-0-0)
Also Offered As: AREC 570.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both ECON 530 and AREC 570.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 535 Applied Econometrics Credits: 3 (3-0-0)
Also Offered As: AREC 535.
Course Description: Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.
Prerequisite: (ECON 335 or AREC 335) and (ECON 304 or ECON 306).
Registration Information: Credit not allowed for both ECON 535 and AREC 535.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: AREC 540.
Course Description: Theory, methods, and policy in environmental and natural resource economics.
Prerequisite: AREC 506 or ECON 506.
Registration Information: Credit not allowed for both ECON 540 and AREC 540.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 541 Environmental Economics Credits: 3 (3-0-0)
Also Offered As: AREC 541.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 541 and AREC 541.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 543 Regional Economics-Theory, Methods, and Issues Credits: 3 (3-0-0)
Also Offered As: AREC 543.
Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.
Prerequisite: ECON 306 and ECON 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 543 and AREC 543.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 550 Evolution of Economic Thought Credits: 3 (3-0-0)
Course Description: From Plato and Aristotle to the modern period.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 560 Macroeconomic Analysis I Credits: 3 (3-0-0)
Course Description: Theoretical and empirical analysis of short-run and long-run macroeconomic performance across countries using dynamic models.
Prerequisite: ECON 304 and ECON 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 606  Microeconomic Analysis I  Credits: 3 (3-0-0)
Also Offered As: AREC 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 506 and ECON 501.
Registration Information: Credit not allowed for both ECON 606 and AREC 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 635  Econometric Theory I  Credits: 3 (3-0-0)
Also Offered As: AREC 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 635 and AREC 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 640  International Trade Theory  Credits: 3 (3-0-0)
Course Description: Theory of international trade including comparative advantage, factor growth, market distortions, and commercial policy.
Prerequisite: ECON 306 or ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 663  Urban and Regional Modeling  Credits: 3 (3-0-0)
Course Description: Methodological approaches in regional economics: general equilibrium, input-output, computable general equilibrium models; social accounting matrices.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Restriction: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 698  Research--Technical Paper  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: (ECON 504 and ECON 506 and ECON 705 or AREC 735) and (ECON 735).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 704  Macroeconomic Analysis II  Credits: 3 (3-0-0)
Course Description: Theoretical and empirical frameworks for analyzing macroeconomic policies and their impact on economic growth, employment, and income distribution.
Prerequisite: ECON 604.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 705  Heterodox Approaches to Economics  Credits: 3 (3-0-0)
Course Description: Contemporary heterodox approaches to economic research.
Prerequisite: ECON 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 706  Microeconomic Analysis II  Credits: 3 (3-0-0)
Also Offered As: AREC 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 706 and AREC 706.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.

ECON 715  Monetary Economics  Credits: 3 (3-0-0)
Course Description: Principle issues of monetary theory: money supply and demand, interest rates, and current problems of monetary policy.
Prerequisite: ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 720  Public Economics II  Credits: 3 (3-0-0)
Course Description: Analysis of welfare foundations of public expenditure, including cost-benefit analysis.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 735  Econometric Theory II  Credits: 2 (2-0-0)
Also Offered As: AREC 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 735 and AREC 735. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736A Advanced Econometric Methods: Discrete Choice Models  Credit: 1 (1-0-0)
Also Offered As: AREC 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736B Advanced Econometric Methods: Panel Data Models  Credit: 1 (1-0-0)
Also Offered As: AREC 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736C Advanced Econometric Methods: Time Series Models  Credit: 1 (1-0-0)
Also Offered As: AREC 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 740 Advanced Natural Resource Economics  Credits: 3 (3-0-0)
Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.
Prerequisite: AREC 706 or AREC 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 740 and AREC 740.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 741 Advanced Environmental Economics  Credits: 3 (3-0-0)
Also Offered As: AREC 741.
Course Description: Advanced theory, methods, and literature in environmental economics.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 741 and AREC 741.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 742 International Production and Monetary Theory  Credits: 3 (3-0-0)
Course Description: Factor movements, theory of international production (multinationalism), balance of payments, and international monetary system.
Prerequisite: ECON 304 or ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 760 Theories of Economic Development  Credits: 3 (3-0-0)
Course Description: Analysis of fundamentals of economic development (processes, problems, and strategies) with special reference to developing nations.
Prerequisite: ECON 460.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 770 Economic Thought and Systems  Credits: 3 (3-0-0)
Course Description: Aspects of modern economic thought and comparative economics selected according to backgrounds and interests of the class.
Prerequisite: ECON 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 771 Political Economy of Race and Gender  Credits: 3 (3-0-0)
Course Description: Economic approaches to inequality based on race/ethnicity, gender, and class.
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 772 Marxist Political Economy  Credits: 3 (3-0-0)
Course Description: Marxist method, relevance of Marxist approach, and relation to other economic approaches.
Prerequisite: ECON 505.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 792A Seminar: Theory Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 792B Seminar: Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 792C Seminar: Social and Political Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 792D Seminar: Development Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 792E Seminar: Quantitative Analysis Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 793 Seminar--Doctoral Research Credits: 3 (0-0-3)
Course Description: 
Prerequisite: (ECON 704 and ECON 705 and ECON 706) and (ECON 735 or AREC 735). 
Term Offered: Spring. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

ECON 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

Major in Economics
Economics is the study of how people and societies use scarce resources to produce the things they want. Economic theory provides a framework for understanding economic issues, analyzing and predicting the likely effects of economic behavior and government policies, and formulating efficient and equitable solutions to pressing economic problems.

A strong liberal arts curriculum including arts and humanities, social and natural sciences, advanced composition, mathematics, and statistics provides the depth and breadth of knowledge needed to systematically and logically analyze problems, generate and test ideas, and develop effective communication and quantitative skills. Economics majors develop an appreciation of economic issues, and learn to analyze and critically evaluate economic phenomena and policies. The major core includes four semesters of economic theory, a semester of econometrics, a senior capstone seminar, and several semesters of economics electives covering a wide variety of economic topics from environmental and natural resource economics to the history of economic institutions and political economy.

Learning Outcomes
Students will:

• Display command of basic microeconomic concepts such as rationality, cost/benefit, supply and demand theory, decision making at the margin, monopoly and competition, and efficiency and equity.
• Display command of basic macroeconomic concepts such as aggregate demand and supply, fiscal and monetary policy, and the use of these policies in the macro-economy.
• Understand and analyze basic economic issues found in the news and understand how the economic aspects of society work.

Potential Occupations
Economists are employed in a wide variety of fields from education and research to business and government. Nonprofit and international organizations use economists in overseas development, environmental conservation, and international relations. Economics, like many liberal arts majors, provides students with a broad academic background suitable for a variety of jobs. Economics majors are trained to think independently and critically, communicate effectively, and function in a multicultural world. Many employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Careers for graduates are available in education, business, and government. Participation in internships or cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can pursue careers in economics or attain advanced positions with the possibility of rising to top professional levels.

Depending on interests, the electives taken, or the minor selected, available career choices include, but are not limited to: commodities/stock broker, financial analyst, economic forecaster, trust administrator, loan counselor, pension funds administrator, foreign trade analyst, public policy analyst, regional/urban planner, foreign service officer, tax auditor, natural resource analyst, educator, program administrator, researcher, community organizer, environmental activist, international aid organization analyst or administrator, marketing analyst, purchasing agent, public relations/media planner, program consultant, contract

...
administrator, systems evaluator, personnel planner, portfolio administrator, finance manager, secondary school teacher.

**Requirements**

### Effective Spring 2013

Economics majors must achieve a minimum grade of 1.670 (C-) in each of the economics courses counted toward the major.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
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<tr>
<td>ECON 202</td>
<td>3C</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>MATH 141</td>
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<tr>
<td>MATH 155</td>
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<td>MATH 160</td>
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<td>Arts and Humanities</td>
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<td>Historical Perspectives</td>
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<tr>
<td>Electives</td>
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</table>

| Total Credits | 30 |

| Sophomore |
|-----------|-----|
| ECON 204 | 3C  | 3 |
| Select one course from the following: | 3 |
| STAT 201 | General Statistics |
| STAT 204 | Statistics for Business Students |
| STAT 301 | Introduction to Statistical Methods |
| Biological and Physical Sciences | 3A | 7 |
| Global and Cultural Awareness¹ | 3E | 3 |
| Additional Social Sciences (see course list below) | 6-9 |
| Minor/second major/interdisciplinary minor² | 6 |
| Electives | 2-5 |

| Total Credits | 30 |

| Junior |
|---------|-----|
| ECON 304 | Intermediate Macroeconomics |
| ECON 306 | Intermediate Microeconomics | 4A,4B | 3 |
| Select one course from the following: | 3 |
| ECON 332/POLS 332 | International Political Economy |
| ECON 372 | History of Economic Institutions and Thought |
| ECON 376 | Marxist Economic Thought |
| ECON 379/HIST 379 | Economic History of the United States |
| ECON 474 | Recent Economic Thought |
| ECON 335/AREC 335 | Introduction to Econometrics |
| Economics³ | 3-6 |
| Minor/second major/interdisciplinary minor² | 6 |
| Advanced Writing | 2 | 3 |
| Electives | 3-6 |

| Total Credits | 30 |

| Senior |
|---------|-----|
| ECON 492 | Seminar | 4A,4B,4C | 3 |
| Economics⁴ | 6 |
| Minor/second major/interdisciplinary studies minor² | 9-15 |
### Additional Social Sciences

Select any 3 courses from the following list for a minimum of 9 credits (AUCC category 3E courses except ECON 211 may count toward the 9 credit requirement):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<th>Credits</th>
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<td>AGRI 270</td>
<td>World Interdependence-Population and Food (GT-SS3)</td>
<td>3E</td>
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<tr>
<td>AMST 100</td>
<td>Self/Community in American Culture, 1600-1877 (GT-AH2)</td>
<td>3D</td>
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<tr>
<td>AMST 101</td>
<td>Self/Community in American Culture Since 1877 (GT-AH2)</td>
<td>3D</td>
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<tr>
<td>BUS 205</td>
<td>Legal and Ethical Issues in Business</td>
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<td>BUS 260</td>
<td>Social-Ethical-Regulatory Issues in Business</td>
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<tr>
<td>JTC 100</td>
<td>Media in Society (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>JTC 311</td>
<td>History of Media</td>
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<td>JTC 316</td>
<td>Multiculturalism and the Media</td>
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<td>JTC 411</td>
<td>Media Ethics and Issues</td>
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<td>JTC 412</td>
<td>International Mass Communication</td>
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<td>JTC 413</td>
<td>New Communication Technologies and Society</td>
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<td>JTC 414</td>
<td>Media Effects</td>
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<td>JTC 415</td>
<td>Communications Law</td>
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<td>NR 120A</td>
<td>Environmental Conservation (GT-SC2)</td>
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<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<td>NR 330</td>
<td>Human Dimensions in Natural Resources</td>
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<td>SOWK 110</td>
<td>Contemporary Social Welfare (GT-SS1)</td>
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<td>SOWK 150</td>
<td>Introduction to Social Work</td>
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<td>SOWK 233</td>
<td>Human Behavior in the Social Environment</td>
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<td>SOWK 350</td>
<td>Legal Issues in Human Services</td>
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<td>SOWK 352</td>
<td>Indigenous Women, Children and Tribes</td>
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Select from the list of courses in category 3E of the AUCC. This course (except ECON 211) may also fulfill the Additional Social Sciences requirement. This course may also fulfill a requirement within a minor, second major, or interdisciplinary minor. If ECON 211 is chosen, it may also be used to fulfill the Economics requirement in footnote 3. If selecting a course that will double count for requirements within this major, then select enough elective credits to bring the program total to 120.

Students must complete a minor, second major, or interdisciplinary minor.

Select any 2 ECON courses.

Select any 2 upper-division (300- or 400-level) ECON courses.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

**Freshman**

<table>
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<tr>
<th>Semester 1</th>
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<td>College Composition (GT-CO2)</td>
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<td>Historical Perspectives</td>
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<td>ECON 202</td>
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<tr>
<td>Principles of Microeconomics (GT-SS1)</td>
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<td>Select one course from the following:</td>
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<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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**Sophomore**

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<tr>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td></td>
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<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
<td>3E</td>
<td>3</td>
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<tr>
<td>Additional Social Sciences (See List on Concentration Requirements Tab)</td>
<td></td>
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<tr>
<td>Minor/second major/interdisciplinary minor course</td>
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<table>
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<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>STAT 201</td>
<td>General Statistics</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>STAT 204</td>
<td>Statistics for Business Students</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>X</td>
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<td>Biological and Physical Sciences</td>
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<td></td>
<td>3A</td>
<td>4</td>
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<td>Additional Social Sciences (See List on Concentration Requirements Tab)</td>
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<td>Minor/second major/interdisciplinary minor course</td>
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<tr>
<td>Elective</td>
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<td></td>
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<td><strong>Total Credits</strong></td>
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</table>
Minor in Economics

The minor in Economics is designed to prepare students for understanding current socioeconomic problems in the areas of resource allocation, inflation, unemployment, income distribution, environmental degradation, international trade, and monopoly power. The program can be of help to students interested in careers in business management, teaching, government, banking, public policy, and related areas.

Requirements

Effective Fall 1999

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Economics minors must achieve a 2.000 grade point average in all courses taken for the minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>Lower Division</strong></td>
<td></td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3</td>
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<tr>
<td><strong>Upper Division</strong></td>
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<td></td>
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<tr>
<td>ECON 304</td>
<td>Intermediate Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 306</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
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<tr>
<td>ECON ***</td>
<td>Economics, numbered ECON 304 or higher (with prior department approval)</td>
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<td><strong>Total Credits</strong></td>
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</table>
### Master of Arts in Economics, Plan A

**Requirements**  
**Effective Fall 2014**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AREC 506/</td>
<td>Applied Microeconomic Theory</td>
<td>3</td>
</tr>
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<td>ECON 506</td>
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<tr>
<td>AREC 507</td>
<td>Applied Welfare and Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AREC 535/</td>
<td>Applied Econometrics</td>
<td>3</td>
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<tr>
<td>ECON 535</td>
<td></td>
<td></td>
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<tr>
<td>ECON 501</td>
<td>Quantitative Methods for Economists</td>
<td>3</td>
</tr>
<tr>
<td>ECON 504</td>
<td>Applied Macroeconomics</td>
<td>3</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Thesis</td>
<td>ECON 699 Thesis</td>
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<td>Total Credits</td>
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</table>

A minimum of 33 credits are required to complete this program.

1. Electives must be 500-level or above, and do not include ECON 784.

### Ph.D. in Economics

**Requirements**  
**Effective Fall 2014**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Core Courses</td>
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</tr>
<tr>
<td>AREC 606/</td>
<td>Microeconomic Analysis I</td>
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<td>ECON 606</td>
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<tr>
<td>AREC 635/</td>
<td>Econometric Theory I</td>
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<td>AREC 706/</td>
<td>Microeconomic Analysis II</td>
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<td>ECON 706</td>
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<td>AREC 735/</td>
<td>Econometric Theory II</td>
<td>2</td>
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<td>ECON 735</td>
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<tr>
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<td>Electives</td>
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<tr>
<td>Field Courses</td>
<td>Two pairs of field courses from among those designated by the department</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Research and Dissertation</td>
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<tr>
<td>ECON 698</td>
<td>Research--Technical Paper</td>
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<tr>
<td>ECON 793</td>
<td>Seminar--Doctoral Research</td>
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<tr>
<td>ECON 799</td>
<td>Dissertation</td>
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<td>Total Credits</td>
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</table>

A minimum of 72 credits are required to complete this program.

1. Electives do not include ECON 699 or ECON 784 or ECON 799. Electives must be at the 500-level or above, chosen with advisor approval.

2. Completion of the Technical Paper, with satisfactory oral defense along with appropriate course work, satisfies the requirements for the Plan B M.A. degree.

3. Students must pass the written Ph.D. Qualifying Examination, the preliminary Oral Examination, and the final Oral Examination.
Department of English

The English Department at CSU is a vibrant & diverse place.

It is home to poets and linguists, literacy researchers and teacher educators, novelists and literary scholars, composition specialists and writers of creative nonfiction. We share a passion for exploring the multiple and dynamic ways that the English language is used to meet the demands of life in the twenty-first century.

Office in Eddy Hall, Room 359
(970) 491-6428
english.colostate.edu (http://english.colostate.edu)

Professor Louann Reid, Chair
Associate Professor Pam Coke, Undergraduate Coordinator
Professor Ellen Brinks, Graduate Coordinator

Undergraduate

Majors
• Major in English
  • Creative Writing Concentration
  • English Education Concentration
  • Language Concentration
  • Literature Concentration
  • Writing, Rhetoric and Literacy Concentration

Minors
• Minor in English

Graduate

Graduate Programs in English

The Department of English offers programs of study leading to the Master of Fine Arts degree in Creative Writing or the Master of Arts degree in Literature, English Education, teaching of English as a foreign language or second language, Rhetoric and Composition, or Creative Non-Fiction. The department shares a joint Master of Arts degree in foreign languages and the teaching of English as a second language and participates in the Peace Corps Master’s International program.

Students interested in graduate work should refer to the Graduate and Professional Bulletin (http://graduateschool.colostate.edu/current-students/bulletin.aspx).

Master Programs
• Master of Fine Arts in Creative Writing
• Master of Arts in English, Creative Nonfiction Specialization
• Master of Arts in English, Plan A, Literature Specialization
• Master of Arts in English, Plan B, Literature Specialization
• Master of Arts in English, Plan A, Rhetoric and Composition Specialization*
• Master of Arts in English, Plan B, Rhetoric and Composition Specialization*
• Master of Arts in English, Plan A, TESL/TEFL Specialization
• Master of Arts in English, Plan B, TESL/TEFL Specialization

* Please see department for program of study.

Courses

Subjects in this department include: American Studies (AMST), Composition (CO), English (E), and English for Academic Purposes (EAP).

American Studies (AMST)

AMST 100  Self/Community in American Culture, 1600-1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture, 1600-1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 101  Self/Community in American Culture Since 1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture since 1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 300  American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: E 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both AMST 300 and E 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AMST 492 Seminar in American Studies  Credits: 3 (0-0-3)
Course Description: Seminar for seniors in Liberal Arts involving critical reading, writing, research, and discussion. Topics vary.
Prerequisite: AMST 300 or E 300.
Registration Information: Senior standing or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AMST 495 Independent Study in American Studies  Credits: Var[1-3] (0-0-0)
Course Description: Individually-guided studies in interdisciplinary work in American culture.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AMST 499 Thesis in American Studies  Credits: 3 (0-0-3)
Course Description:
Prerequisite: AMST 492.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Composition (CO)

CO 130 Academic Writing (GT-CO1)  Credits: 3 (3-0-0)
Course Description: Academic writing, critical thinking, and critical reading through study of a key academic issue.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Introductory Writing (GT-CO1).

CO 150 College Composition (GT-CO2)  Credits: 3 (3-0-0)
Course Description: Understanding and writing for rhetorical situations; critical reading and response; writing source-based argument for academic and public audiences.
Prerequisite: CO 130.
Registration Information: Must have taken CO 130 or Composition Challenge Exam (score of 3, 4, or 5) or have a SAT verbal/critical reading score of 600 or above or ACT COMPOSITE score of 26 or above or Directed Self-Placement Survey score of 15. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Intermediate Writing 1A, Intermediate Writing (GT-CO2).

CO 300 Writing Arguments (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Reading, analyzing, researching, and writing arguments.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in arts and humanities.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301B Writing in the Disciplines: Sciences (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in sciences.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in social sciences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301D Writing in the Disciplines: Education (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in education.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 302 Writing in Digital Environments (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Writing strategies, patterns and approaches for online materials.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 401 Writing and Style  Credits: 3 (3-0-0)
Course Description: Advanced expository and persuasive writing emphasizing modes, strategies, and styles for a variety of audiences and purposes.
Prerequisite: CO 300 or CO 301A to 301D or CO 302.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CO 402 Principles of Digital Rhetoric and Design Credits: 3 (3-0-0)
Course Description: Advanced study of rhetorical contexts shaping online texts. Includes instruction in coding and digital design.
Prerequisite: None.
Registration Information: Must have completed AUCC category 2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

English (E)

E 140 The Study of Literature (GT-AH2) Credits: 3 (3-0-0)
Course Description: Basic principles of reading literary texts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 142 Reading Without Borders (GT–AH2) Credits: 3 (3-0-0)
Course Description: Authors from a range of international, cross-national, cultural, and ethnic backgrounds focusing on themes of immigration, exile, or education.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 179 Western American Literature Credits: 3 (3-0-0)
Course Description: Trans-Mississippi West in fiction and other literary forms.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Additional Information: Global & Cultural Awareness 3E, Literature & Humanities (GT-AH2).

E 210 Beginning Creative Writing Credits: 3 (3-0-0)
Course Description: Basic techniques of writing fiction and poetry; may include some elements of drama.
Prerequisite: E 100 to 281 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 232 Introduction to Humanities (GT-AH2) Credits: 3 (3-0-0)
Course Description: Great literature of Western cultural tradition from ancient times to present.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 234 Introduction to Native American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both E 234 and ETST 234.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 236 Short Fiction Credits: 3 (3-0-0)
Course Description: Examines form, technique and interpretation in short fiction.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

E 237 Introduction to Science Fiction Credits: 3 (3-0-0)
Course Description: Historical development and major themes of science fiction, featuring writers such as Wells, Huxley, Bradbury, and LeGuin.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 238 20th-Century Fiction (GT-AH2) Credits: 3 (3-0-0)
Course Description: 20th-century fiction chosen for its relevance to global and cultural awareness.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Global & Cultural Awareness 3E, Literature & Humanities (GT-AH2).

E 239 Introduction to Chicano Literature Credits: 3 (3-0-0)
Also Offered As: ETST 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both E 239 and ETST 239.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 240 Introduction to Poetry Credits: 3 (3-0-0)
Course Description: Development of critical skills necessary to understand and enjoy poetry.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 242 Reading Shakespeare (GT-AH2) Credits: 3 (3-0-0)
Course Description: Reading of Shakespeare texts, using various approaches of interpretation for understanding and relation to our contemporary cultural situation.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite</th>
<th>Terms Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 245</td>
<td>World Drama (GT-AH2)</td>
<td>3 (3-0-0)</td>
<td>Course Description: World drama in cultural contexts.</td>
<td>None</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No</td>
<td>Arts &amp; Humanities 3B, Literature &amp; Humanities (GT-AH2).</td>
</tr>
<tr>
<td>E 270</td>
<td>Introduction to American Literature (GT-AH2)</td>
<td>3 (3-0-0)</td>
<td>Course Description: History and development of American writings from 16th-century travel narratives through early 20th-century modernism.</td>
<td>None</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
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<tr>
<td>E 276</td>
<td>Survey of British Literature I (GT-AH2)</td>
<td>3 (3-0-0)</td>
<td>Course Description: British literature from Beowulf through the 18th century in relation to its historical contexts.</td>
<td>None</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
<td>Arts &amp; Humanities 3B, Literature &amp; Humanities (GT-AH2).</td>
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<tr>
<td>E 277</td>
<td>Survey of British Literature II (GT-AH2)</td>
<td>3 (3-0-0)</td>
<td>Course Description: British literature from the Romantics to the present in relation to its historical contexts.</td>
<td>None</td>
<td>Spring</td>
<td>Traditional</td>
<td>No</td>
<td>Arts &amp; Humanities 3B, Literature &amp; Humanities (GT-AH2).</td>
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<tr>
<td>E 300</td>
<td>American Lives-Methods in American Studies</td>
<td>3 (3-0-0)</td>
<td>Also Offered As: AMST 300. Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.</td>
<td>AMST 100 and AMST 101. AMST 300.</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
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<tr>
<td>E 301A</td>
<td>Intermediate Creative Writing: Fiction</td>
<td>3 (3-0-0)</td>
<td>Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.</td>
<td>E 210 with a minimum grade of B.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
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<tr>
<td>E 311B</td>
<td>Intermediate Creative Writing: Poetry</td>
<td>3 (3-0-0)</td>
<td>Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.</td>
<td>E 210 with a minimum grade of B.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
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<tr>
<td>E 311C</td>
<td>Intermediate Creative Writing: Nonfiction</td>
<td>3 (3-0-0)</td>
<td>Course Description: Varied topics covering general linguistics or the relationships between language and literature or society and science.</td>
<td>None</td>
<td>Spring</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
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<tr>
<td>E 320</td>
<td>Introduction to the Study of Language</td>
<td>3 (3-0-0)</td>
<td>Course Description: Advanced grammar; language history; meaning; applications to teaching composition, reading, and literature.</td>
<td>E 322</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
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<tr>
<td>E 321</td>
<td>English Language for Teachers I</td>
<td>3 (3-0-0)</td>
<td>Course Description: Foundations of language structure, emphasizing grammar, sounds, spelling, word structure, linguistic variation, usage, acquisition, and pedagogy.</td>
<td>None</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
</tr>
<tr>
<td>E 322</td>
<td>English Language for Teachers II</td>
<td>3 (3-0-0)</td>
<td>Course Description: Introduction to teaching English to speakers of other languages for teacher certification candidates and for those wanting to teach abroad.</td>
<td>E 320 or E 322</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
</tr>
<tr>
<td>E 323</td>
<td>English Language for Teachers III</td>
<td>3 (3-0-0)</td>
<td>Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.</td>
<td>E 210 with a minimum grade of B.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
</tr>
<tr>
<td>E 324</td>
<td>Teaching English as a Second Language</td>
<td>3 (3-0-0)</td>
<td>Course Description: Critical examination of reading processes, as well as the rhetorical and cultural contexts of readers on the web.</td>
<td>E 150 or HONR 193</td>
<td>Spring</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
</tr>
<tr>
<td>E 325</td>
<td>Principles of Writing and Rhetoric</td>
<td>3 (3-0-0)</td>
<td>Course Description: Humanities-based exploration of central principles of rhetoric in written communication.</td>
<td>CO 300 or CO 301A to 301D - at least 1 course.</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No</td>
<td>None.</td>
</tr>
</tbody>
</table>
E 326 Development of the English Language  Credits: 3 (3-0-0)
Course Description: Chronological study of four historical stages of English (Old, Middle, Early Modern, Modern) with emphasis on grammar, vocabulary, and phonology.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 327 Syntax and Semantics  Credits: 3 (3-0-0)
Course Description: Linguistic study of sentence structure and grammatical relations, semantic roles and representation.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 328 Phonology, Morphology, and Lexis  Credits: 3 (3-0-0)
Course Description: Linguistic study of pronunciation, word-formation, and vocabulary.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 329 Pragmatics and Discourse Analysis  Credits: 3 (3-0-0)
Course Description: Linguistic study of general principles of interpretation and textual patterns.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 330 Gender in World Literature  Credits: 3 (3-0-0)
Course Description: Selected world literature ranging from ancient world to present, considered in light of various complexities of gender relations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.

E 331 Early Women Writers  Credits: 3 (3-0-0)
Course Description: Selected women writers from any period before the 20th century.
Prerequisite: E 276 or E 277.
Terms Offered: May be taken twice for a maximum of 6 credits.
Grade Mode: Traditional.
Special Course Fee: No.

E 332 Modern Women Writers  Credits: 3 (3-0-0)
Course Description: Selected 20th-century women writers in variety of genres emphasizing relationships between gender, writing, and reading.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 333 Critical Studies of Popular Texts  Credits: 3 (3-0-0)
Course Description: Texts representing one or more popular modes focusing on issues of gender, sexuality, racial or ethnic identity, technology, and colonialism.
Prerequisite: CO 150.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 334 Gay and Lesbian Literature  Credits: 3 (3-0-0)
Course Description: Literature by gay and lesbian authors on gay and lesbian themes.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 335 Western Mythology  Credits: 3 (3-0-0)
Course Description: Major themes in western myth: classical, Biblical, and Germanic.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 336 Ethnic Literature in the United States  Credits: 3 (3-0-0)
Course Description: Comparative study of literatures from a range of U.S. ethnic experiences and perspectives.
Prerequisite: ETST 100 to 481 - at least 1 course or E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 337 Literature of the Earth  Credits: 3 (3-0-0)
Course Description: Non-fiction, fiction, and poetry on landscape, climate, animality, ecology, place.
Prerequisite: CO 150.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 338 Literature and Film Studies  Credits: 3 (3-0-0)
Course Description: Studies film adaptations of literary works with attention to narrative, style, theme, adaptation, and revision.
Prerequisite: E 100 to 499.
Registration Information: Freshman not allowed.
Grade Mode: Traditional.
Special Course Fee: No.

E 339 Literary Criticism and Theory  Credits: 3 (3-0-0)
Course Description: Theory and practice of modern literary analysis and evaluation; writing about literature.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 342 Shakespeare I Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist from the early plays through Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 343 Shakespeare II Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist after Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 345 American Drama Credits: 3 (3-0-0)
Course Description: Representative examples from mainstream and alternative drama.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 350 The Gothic in Literature and Film Credits: 3 (3-0-0)
Course Description: Interdisciplinary, cross-cultural approach to gothic works from the 18th to the 20th centuries.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 356 Asian Literature Credits: 3 (3-0-0)
Course Description: Masterpieces of classical and contemporary literature of China, India, and Japan.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 370 American Literature in Cultural Contexts Credits: 3 (3-0-0)
Course Description: American literature in social, political, economic, aesthetic, intellectual, and multimedia contexts.
Prerequisite: E 270.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
E 382A Study Abroad: Reading and Writing the Zambia Experience Credits: 3 (0-0-3)
Course Description: Community education and health initiatives in Livingstone, Zambia, in the context of fiction and nonfiction about such development work.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
E 384A Supervised College Teaching: Classroom Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 384B Supervised College Teaching: Writing Center Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 401 Teaching Reading Credits: 3 (3-0-0)
Course Description: Theory and pedagogy for understanding, interpreting, and evaluating print and visual texts.
Prerequisite: CO 301D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 402 Teaching Composition Credits: 3 (3-0-0)
Course Description: Theory and practice of the analysis and the teaching of writing.
Prerequisite: CO 301A to 301D - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 403 Writing the Environment Credits: 3 (3-0-0)
Course Description: Creative writing in conjunction with study of recent American literature on nature and landscape.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or CO 301A to 301D - at least 1 course or E 311A to 311C - at least 1 course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 405 Adolescents’ Literature Credits: 3 (3-0-0)
Course Description: Survey of literature for adolescents emphasizing development of critical ability, appreciation, and taste.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 420 Beat Generation Writing  Credits: 3 (3-0-0)
Course Description: Shared experiences and historical pressures that made Beat Generation writers, including Kerouac, Ginsberg, Burroughs, and Waldman, a countercultural movement.
Prerequisite: E 311A with a minimum grade of B.
Registration Information: Maximum of 6 credits allowed in course.
Grade Mode: Traditional.
Special Course Fee: No.

E 421 Asian-American Literature  Credits: 3 (3-0-0)
Course Description: Asian American writing on immigration, exile, exclusion, detention, neocolonialism, resistance, hybridity, and transnationalism.
Prerequisite: CO 150 and E 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 422 African-American Literature  Credits: 3 (3-0-0)
Also Offered As: ETST 422.
Course Description: African-American literature as a distinct tradition of writing and protest.
Prerequisite: None.
Registration Information: Credit not allowed for both E 422 and ETST 422.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 423 Latino/a Literature  Credits: 3 (3-0-0)
Course Description: Latino/a writing on themes of settlement, expropriation, resistance, conquest, immigration, exile, hybridity and transnationalism.
Prerequisite: CO 150 and E 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 424 English Renaissance  Credits: 3 (3-0-0)
Course Description: English Renaissance literature (1500-1670) covering a range of poetry, drama, and prose.
Prerequisite: E 276 or E 342 or E 343.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 425 Restoration and 18th Century Literature  Credits: 3 (3-0-0)
Course Description: Poetry, drama, and prose, 1600-1789.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

E 426 British Romanticism  Credits: 3 (3-0-0)
Course Description: British Romantic era literature (1780-1830) with emphasis on the social and cultural context.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 427 Victorian Age  Credits: 3 (3-0-0)
Course Description: Victorian era literature (1830-1900) in social and cultural context with attention to multiple genres (poetry, fiction, drama, and essay).
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
E 428 Postcolonial Literature Credits: 3 (3-0-0)
Course Description: Selected readings in postcolonial literatures and theory.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 278 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 430 18th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction from Defoe to Austen stressing Richardson, Fielding, Smollett, and Sterne.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 278 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 431 19th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction in Victorian and Edwardian eras emphasizing Dickens, the Brontes, Thackeray, George Eliot, and Hardy.
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 432 20th-Century British Fiction Credits: 3 (3-0-0)
Course Description: British fiction from Conrad to the present emphasizing Joyce, Lawrence, Forster, Woolf, and Beckett.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 278 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 433 Literatures of the American West Credits: 3 (3-0-0)
Course Description: Relationships between places, environments, cultures, and literature in the American West.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 278 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or HIST 351 or HIST 352 or HIST 353.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 436 American Fiction, 1945-Present Credits: 3 (3-0-0)
Course Description: Form, content, and context of American fiction from 1945 to present. Kesey, Updike, Heller, Pynchon, Barthelme, Vonnegut, and others.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 278 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 438 Native American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both E 438 and ETST 438.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 440 American Prose Before 1900 Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. before 1900.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 441 American Prose Since 1900 Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. from 1900 to the present.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 443 English Renaissance Drama Credits: 3 (3-0-0)
Course Description: Interplay between dramatic form and cultural context in the plays of Marlowe, Jonson, Cary, Middleton, Heywood, Dekker, Webster.
Prerequisite: E 276 or E 342 or E 343.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 444 Restoration and 18th-Century Drama Credits: 3 (3-0-0)
Course Description: Major plays and dramatic issues from 1660 to 1780 including Dryden, Etherege, Congreve, Sheridan, and others.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 445 Modern British and European Drama Credits: 3 (3-0-0)
Course Description: Realism and anti-realism in modern British and European drama.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 451 Medieval Literature Credits: 3 (3-0-0)
Course Description: Genres, themes, and authors of the Middle Ages.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 452 Masterpieces of European Literature  Credits: 3 (3-0-0)
Course Description: Selected works of European literature through the 19th century.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 455 European Literature after 1900  Credits: 3 (3-0-0)
Course Description: Continental European texts in translation since 1900.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 460 Chaucer  Credits: 3 (3-0-0)
Course Description: Chaucer’s works in medieval context.
Prerequisite: E 341.
Registration Information: May be repeated once for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 463 Milton  Credits: 3 (3-0-0)
Course Description: Milton’s poetry and prose emphasizing Paradise Lost.
Prerequisite: E 341 and E 276.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 465 Topics in Literature and Language  Credits: 3 (3-0-0)
Course Description: Selected issues in literature and language.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 475 American Poetry Before 1900  Credits: 3 (3-0-0)
Course Description: Major American poets through the nineteenth century including Whitman, Dickinson, and Frost.
Prerequisite: E 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 477 Modern Poetry  Credits: 3 (3-0-0)
Course Description: Major British and American poets from late 19th century to World War II.
Prerequisite: E 240.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 479 Recent Poetry of the United States  Credits: 3 (3-0-0)
Course Description: US poetry since World War II, emphasis on the 1980s through the present.
Prerequisite: E 240.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 475A Internship: Supervised Work Experience  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 475B Internship: Literary Editing  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 475C Internship: Community Literacy Center  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CO 150.
Registration Information: 2.500 GPA. Written consent of CLC director.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 475D Internship: CSU Writing Center  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CO 300 or CO 301.
Registration Information: 2.500 GPA. Written consent of Writing Center director.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
E 495 Independent Study Credits: Var[1-3] (0-0-0)  
Course Description: Individually guided studies in literature, writing, English language, and linguistics.  
Prerequisite: None.  
Registration Information: Maximum of 6 credits allowed in course.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

E 501 Theories of Writing Credits: 3 (3-0-0)  
Course Description: Theoretical approaches to the nature of the composing process.  
Prerequisite: E 402.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 502 Language, Literacy, and Learning Credits: 3 (3-0-0)  
Course Description: Theoretical and practical perspectives on language and learning skills necessary for basic academic reading and writing.  
Prerequisite: E 300 to 481 - at least 3 credits or EDUC 300 to 481 - at least 3 credits or EDCT 300 to 481 - at least 3 credits.  
Registration Information: Teaching experience or 3 credits in upper-division English or education courses.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 503 Investigating Classroom Literacies Credits: 3 (3-0-0)  
Course Description: Research methods and ethical issues in classroom-based inquiry into oral and written literacy practices.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

E 504 Situating Composition Studies Credits: 3 (3-0-0)  
Course Description: Contexts for composition programs, roles for program administrators, and professional opportunities for teachers and scholars.  
Prerequisite: E 501.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

E 505A Major Authors: English Credits: 3 (3-0-0)  
Course Description: Intensive study of the works of one or two major authors.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 505B Major Authors: American Credits: 3 (3-0-0)  
Course Description: Intensive study of the works of one or two major authors.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 505C Major Authors: World Credits: 3 (3-0-0)  
Course Description: Intensive study of the works of one or two major authors.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 505D Major Authors: Comparative Credits: 3 (3-0-0)  
Course Description: Intensive study of the works of one or two major authors.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 505F Major Authors: English American Credits: 3 (3-0-0)  
Course Description: Intensive study of the works of one or two major authors.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 505G Major Authors: American World Credits: 3 (3-0-0)  
Course Description: Intensive study of the works of one or two major authors.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 506A Literature Survey: English Credits: 3 (3-0-0)  
Course Description: Synthesis of literary attitudes, modes, genres of an age.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 506B Literature Survey: American Credits: 3 (3-0-0)  
Course Description: Synthesis of literary attitudes, modes, genres of an age.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 506C Literature Survey: Comparative Credits: 3 (3-0-0)  
Course Description: Synthesis of literary attitudes, modes, genres of an age.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 507 Special Topics in Linguistics Credits: 3 (3-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Written consent of instructor.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.
E 513A Form and Technique in Modern Literature: Fiction  Credits: 3 (3-0-0)
Course Description: Selected readings in and discussion of modern literature and criticism from the writer’s point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 514 Phonology/Morphology-ESL/EFL  Credits: 3 (3-0-0)
Course Description: English sound system and word formation in relation to second language acquisition and teaching.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 526 Teaching English as a Foreign/Second Language  Credits: 3 (3-0-0)
Course Description: Principles of teaching English as a foreign/second language. Development of a coherent method, including activities, materials, and course design.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 528 Professional ESL Teaching: Theory to Practice  Credits: 3 (3-0-0)
Course Description: Theory and practice in the planning and teaching of English as a second/foreign language.
Prerequisite: E 514 and E 515 and E 527.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 588 Department of English

E 500A Research Methods/Theory: Literary Scholarship  Credits: 3 (3-0-0)
Course Description: Research methods in English studies: literary scholarship.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 600B Research Methods/Theory: Design  Credits: 3 (3-0-0)
Course Description: Research methods in English studies: research design with quantitative and qualitative methods.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 601 Research in Teaching English as Second Language  Credits: Var[2-3] (0-0-0)
Course Description: Evaluation and design of research in language acquisition.
Prerequisite: E 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 603  Computers and Composition  Credits: 3 (3-0-0)
Course Description: Relationship of computer-assisted instruction to rhetoric and composition.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 605  Reading/Writing Connection  Credits: 3 (3-0-0)
Course Description: Theoretical understanding of reading and writing processes; practical implications for professional writers and teachers of writing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 607A  Teaching Writing: Composition and Rhetoric  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 607B  Teaching Writing: Creative Writing  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 608  Integrating Writing in the Academic Core  Credit: 1 (0-0-1)
Course Description: Theories and best practices associated with writing integration in the academic core.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 615  Reading Literature-Recent Theories  Credits: 3 (3-0-0)
Course Description: Recent developments in critical and cultural theories of discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630B  Special Topics in Literature: Genre Studies  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630C  Special Topics in Literature: Theory and Technique Studies  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630D  Special Topics in Literature: Gender Studies  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 631  Crossing Boundaries  Credits: 3 (3-0-0)
Course Description: Cross-topical studies of literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 632  Professional Concerns in English  Credits: Var[1-3] (0-0-0)
Course Description: Professional concerns of secondary school teachers of English.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 633  Special Topics in Discourse Studies  Credits: 3 (3-0-0)
Course Description: Varied topics covering cultural or historical areas, or literacy and discourse theory and practice, or professional pedagogical issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 634  Special Topics in TEFL/TESL  Credits: 3 (3-0-0)
Course Description: Theory, practice, and professional conduct of teaching English as a foreign or second language.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 635 Critical Studies in Literature and Culture  Credits: 3 (3-0-0)
Course Description: Advanced interpretation in contemporary literary and
critical studies.
Prerequisite: E 615.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 636 Environmental Literature and Criticism  Credits: 3 (3-0-0)
Course Description: Literary, critical, and theoretical representations of
nature, animals, human-environment relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 637 History of Writing  Credits: 3 (3-0-0)
Course Description: Writing systems and practices across time, cultures,
and varied constructions of author, text, audience, social context,
technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 638 Assessment of English Language Learners  Credits: 3 (3-0-0)
Course Description: Theory, practice, and professional conduct in the
assessment of English language learners.
Prerequisite: E 514 and E 527.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640A Graduate Writing Workshop: Fiction  Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and
analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640B Graduate Writing Workshop: Poetry  Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and
analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 640C Graduate Writing Workshop: Essay  Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and
analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 641 Nonfiction Workshop  Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring various areas within
literary nonfiction.
Prerequisite: E 640C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 642 Writing Hypertexts  Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring development of texts in
electronic formats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 679 Community Service Learning in TESOL  Credit: 1 (1-0-0)
Course Description: Opportunities to learn, practice, and develop skills by
serving the community.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 684A Supervised College Teaching: Composition  Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684B Supervised College Teaching: ESL  Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684C Supervised College Teaching: Creative Writing  Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684D Supervised College Teaching: Literature  Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
E 684E Supervised College Teaching: Computer-Assisted Instruction Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

E 687A Internship: Teaching College English Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

E 687B Internship: Composition Supervision/Administration Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: E 501 and E 684A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

E 687C Internship: Literary Editing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

E 687E Internship: Teaching ESL, K-12 Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

E 687H Internship: ESL-Adult Learning Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687I Internship: ESL-Supervision/Administration Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687J Internship: Arts Administration in Literature Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687K Internship: Public Education Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687L Internship: Computers and Writing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687M Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687N Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687O Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687P Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687Q Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687R Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687S Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687T Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687U Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687V Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687W Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687X Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687Y Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 687Z Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 692 Rhetoric and Composition Seminar Credit: 1 (0-0-1)
Course Description: Forum for faculty and student work in progress.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 694 Independent Study: Portfolio Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

E 698 Research: Project Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.
Major in English

English majors develop an understanding of diverse cultures, literary traditions, and great works of English, American, and world literature. Students expand their ability to analyze a variety of texts and view them through the lenses of diverse critical perspectives. Majors develop the ability to write for both specialized and general audiences. There are five concentrations from which students can choose:

- Creative Writing
- English Education
- Language
- Literature, or
- Writing, Rhetoric and Literacy.

Learning Outcomes

Students will demonstrate:

- Competency in critical reading and interpretive techniques, including:
  - formulating, developing, and supporting interpretive positions with appropriate evidence;
  - using technical and conceptual vocabulary knowledgeably;
• using appropriate methodologies, critical approaches, and theoretical perspectives; and
• being original and creative.

• Effective written expression in a variety of genres for a range of audiences on literary and non-literary topics.
• Familiarity with the main writers, texts, genres, and movements in the literary history of the United States and British Isles; and/or the history and development of the English language; and/or literacy issues in their historical contexts.

Potential Occupations
A major in English prepares students for business, government, or education careers that require broadly educated people who can think critically, communicate effectively, analyze texts, and write well. Many employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments.

The department encourages experiential education by offering a variety of internship opportunities.

Students are also invited to generate their own positions in fields of interests, as well as pursue established local, regional, or national internships. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Depending on a student’s interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: copy editor; project editor; manuscript reader or story analyst; sales representative; publicity and promotion specialist; advertising coordinator; production specialist; assistant book publicist; contracts and permission specialist; agency or arts administrator; human resource manager; human services program developer; public relations; English teacher; teacher of English as a second language; curriculum developer; education administrator; grant writer; technical writer for business, industry, or science; magazine, newspaper, television, education, or government writer; biographer or writer of prose, fiction, or nonfiction; lyricist.

Concentrations
• Creative Writing Concentration
• English Education Concentration
• Language Concentration
• Literature Concentration
• Writing, Rhetoric and Literacy Concentration

Major in English, Creative Writing Concentration
The Creative Writing concentration gives students the opportunity to strengthen their creative writing and reading skills and their imaginations. Students take beginning, intermediate, and advanced courses in one or more of the following genres: fiction, poetry, and nonfiction. Intermediate and advanced courses are primarily workshop classes in which students read and critique one another’s work. At the center of all creative writing courses is the study of craft. Students in the creative writing concentration also take a wide variety of literature classes, which prepare them to be writers by schooling them in literary traditions and styles. An internship program for all English majors offers creative writing students writing and research positions that may lead to employment. In addition, the creative writing program runs a vibrant reading series that gives students the chance to meet visiting writers.

Requirements

Effective Fall 2015
For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

<table>
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<th>Freshman</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>1A</td>
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<td>E 240 Introduction to Poetry</td>
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<td>SPCM 200 Public Speaking</td>
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<td>Arts and Humanities¹</td>
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<td>Biological and Physical Sciences</td>
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<td>Mathematics</td>
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<td>E 210 Beginning Creative Writing</td>
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<tr>
<td>E 270 Introduction to American Literature (GT-AH2)</td>
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<td>Select one from the following:</td>
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<td>E 276 Survey of British Literature I (GT-AH2)</td>
<td>3B</td>
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<tr>
<td>E 277 Survey of British Literature II (GT-AH2)</td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>English Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Philosophy²</td>
<td></td>
<td>3</td>
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</tbody>
</table>
**Major in English, Creative Writing Concentration**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Liberal Arts/History Elective ³</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

**Junior**

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
<td>2</td>
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</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 311A</td>
<td>Intermediate Creative Writing: Fiction</td>
<td>2</td>
</tr>
<tr>
<td>E 311B</td>
<td>Intermediate Creative Writing: Poetry</td>
<td>2</td>
</tr>
<tr>
<td>E 311C</td>
<td>Intermediate Creative Writing: Nonfiction</td>
<td>2</td>
</tr>
<tr>
<td>E 341</td>
<td>Literary Criticism and Theory</td>
<td>4A,4B</td>
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</table>

Second field⁴ 3

Upper-Division English/Composition⁵ 6

Electives 12

**Total Credits** 30

**Senior**

Select one course from the following:⁶

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 412A</td>
<td>Creative Writing Workshop: Fiction</td>
<td>2</td>
</tr>
<tr>
<td>E 412B</td>
<td>Creative Writing Workshop: Poetry</td>
<td>2</td>
</tr>
<tr>
<td>E 412C</td>
<td>Creative Writing Workshop: Nonfiction</td>
<td>2</td>
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Select one course from the following:

<table>
<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>E 460</td>
<td>Chaucer</td>
<td>4C</td>
</tr>
<tr>
<td>E 465</td>
<td>Topics in Literature and Language</td>
<td>4C</td>
</tr>
<tr>
<td>E 470</td>
<td>Individual Author</td>
<td>4C</td>
</tr>
</tbody>
</table>

Second field⁴ 9

Upper-Division English/Composition⁵ 12

Elective 3

**Total Credits** 30

**Program Total Credits:** 120

---

1 Excludes E subject code courses.
2 Select from the list of PHIL courses on English Department checksheet.
3 Select either one other course from the list of courses in AUCC 3D or one from the list of courses in the English Department checksheet.
4 The department requires majors to complete a second field. This may be met by completing the second semester of the second year of a foreign language or by completing 12 credits of upper division courses in a coherent field of study outside English.
5 The department requires creative writing concentrators to take 18 credits of upper-division E and/or CO courses: 3 credits must be in literatures of the British Isles before 1830 or in American or European literatures before 1900; 3 credits must be in literatures of the British Isles after 1830 or in American or European literatures after 1900; 3 credits must be in breakthroughs (ideological, racial, cultural, gendered), and 3 credits must be in a genre course. See the department for the courses that fulfill these 4 categories.
6 Selection must match subtopic of E 311A, E 311B, or E 311C.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
English majors must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
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<td>1B</td>
<td>3</td>
</tr>
<tr>
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<table>
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<th>Semester 2</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>E 240</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
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<tr>
<td>SPCM 200</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
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<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
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<td></td>
<td>3A</td>
<td>4</td>
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<td>Elective</td>
<td></td>
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<td></td>
<td>2</td>
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<tr>
<td>AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2.</td>
<td>X</td>
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</tr>
<tr>
<td><strong>Total Credits</strong></td>
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### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>E 210</td>
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<td>X</td>
<td></td>
<td>3</td>
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<tr>
<td>E 270</td>
<td></td>
<td>X</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
<td>3E</td>
<td>3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Liberal Arts/History Elective (Select from AUCC 3D or Department Checksheet)</td>
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<td>3</td>
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<table>
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<th>Credits</th>
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<tbody>
<tr>
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<td></td>
<td></td>
<td>3</td>
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<tr>
<td>E 276</td>
<td></td>
<td>X</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>E 277</td>
<td></td>
<td>X</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy Course (Select from Department Checksheet)</td>
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<td></td>
<td>3</td>
<td></td>
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<tr>
<td>English Elective</td>
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<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AUCC 3A (Biological and Physical Sciences), AUCC 3B (Arts and Humanities), AUCC 3C (Social and Behavioral Sciences), E 210, E 240, E 270 must be completed by the end of Semester 4.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
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### Junior

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<th>Credits</th>
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<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>E 311A</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 311B</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 311C</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 341</td>
<td></td>
<td>X</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
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<tr>
<td><strong>Total Credits</strong></td>
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<td>15</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
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<tr>
<td></td>
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</tbody>
</table>
Major in English, English Education Concentration

The English Education concentration provides students with preparation for teaching in secondary schools. It is designed for students who wish to pursue a career in teaching language arts and offers a range of courses in language, literature, and writing. Students may receive an endorsement from the State of Colorado in English Language Arts. In addition to the common requirements for the English major, students pursuing teaching licensure take several extra courses in English, as well as education classes through the School of Education.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu).

Requirements

Effective Fall 2015

For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
</tr>
<tr>
<td>E 240</td>
<td>Introduction to Poetry</td>
<td></td>
</tr>
<tr>
<td>E 142</td>
<td>Reading Without Borders (GT-AH2)</td>
<td>3E</td>
</tr>
<tr>
<td>E 245</td>
<td>World Drama (GT-AH2)</td>
<td>3E</td>
</tr>
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</table>

Program Total Credits: 120
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB 170</td>
<td>World Literatures to 1500 (GT-AH2)</td>
<td>3E</td>
</tr>
<tr>
<td>LB 171</td>
<td>World Literatures-The Modern Period (GT-AH2)</td>
<td>3E</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
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</table>

Arts and Humanities: 3B 3

Biological and Physical Sciences: 3A 4

Historical Perspectives: 3D 3

Mathematics: 1B 3

Electives: 6

Total Credits: 31

**Sophomore**

<table>
<thead>
<tr>
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<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
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<tr>
<td>E 270</td>
<td>Introduction to American Literature (GT-AH2)</td>
<td>3B</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 276</td>
<td>Survey of British Literature I (GT-AH2)</td>
<td>3B</td>
</tr>
<tr>
<td>E 277</td>
<td>Survey of British Literature II (GT-AH2)</td>
<td>3B</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E 342</td>
<td>Shakespeare I</td>
<td></td>
</tr>
<tr>
<td>E 343</td>
<td>Shakespeare II</td>
<td></td>
</tr>
<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td>3</td>
</tr>
</tbody>
</table>

Biological and Physical Sciences: 3A 3

Social and Behavioral Sciences: 3C 3

Elective: 2

Total Credits: 28

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 322</td>
<td>English Language for Teachers I</td>
<td>3</td>
</tr>
<tr>
<td>E 341</td>
<td>Literary Criticism and Theory</td>
<td>4A,4B</td>
</tr>
<tr>
<td>E 401</td>
<td>Teaching Reading</td>
<td>3</td>
</tr>
<tr>
<td>E 405</td>
<td>Adolescents' Literature</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
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<td>EDUC 463</td>
<td>Methods in Teaching Language Arts</td>
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</tbody>
</table>

Upper-Division English requirement: 9

Elective: 3

Total Credits: 32

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 402</td>
<td>Teaching Composition</td>
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</tr>
<tr>
<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 485B</td>
<td>Student Teaching: Secondary</td>
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<tr>
<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
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</tr>
<tr>
<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
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</tbody>
</table>

Select one capstone course from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E 460</td>
<td>Chaucer</td>
<td>4C</td>
</tr>
<tr>
<td>E 465</td>
<td>Topics in Literature and Language</td>
<td>4C</td>
</tr>
<tr>
<td>E 470</td>
<td>Individual Author</td>
<td>4C</td>
</tr>
</tbody>
</table>

English Elective: 3
The department requires Licensure majors to take a minimum of 12 credits of upper-division E or CO subject code courses to include the categories listed below. One course may count for two categories if necessary, but students must take a minimum of 12 credits to fulfill this requirement:

- 3 credits must be in literatures of the British Isles before 1830, or in American or European literatures before 1900;
- 3 credits must be in literatures of the British Isles after 1830, or in American or European literatures after 1900;
- 3 credits must be in either breakthroughs (ideological, racial, cultural, gendered) or genre courses;
- One course must be a world literature course;
- One course must be a capstone course (see list in senior year, above).

See the department list for the courses that fulfill these categories.

Any lower or upper-division E subject code course.

### Major Completion Map

#### Distinctive Requirements for Degree Program:
For admission to Teacher Licensure program, students must have a 2.750 cum. GPA on all work attempted at accredited institutions. For licensure, students must complete all coursework in the teaching concentration and professional education with a grade of C or above and must have a cumulative GPA of 2.750.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td></td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>E 142</td>
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<td>E 245</td>
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<td>LB 170</td>
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<tr>
<td>LB 171</td>
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<tr>
<td>Total Credits</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

- Reading Without Borders (GT–AH2)
- World Drama (GT-AH2)
- World Literatures to 1500 (GT-AH2)
- World Literatures-The Modern Period (GT-AH2)

#### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>E 276</td>
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<td>3</td>
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<tr>
<td>E 277</td>
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<td></td>
</tr>
<tr>
<td>EDUC 275</td>
<td></td>
<td></td>
<td>3C</td>
<td>3</td>
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<tr>
<td>EDUC 340</td>
<td></td>
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<td>3C</td>
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<tr>
<td>Total Credits</td>
<td>15</td>
<td></td>
<td></td>
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Select one course from the following:

- Survey of British Literature I (GT-AH2)
- Survey of British Literature II (GT-AH2)
- Schooling in the United States (GT-SS3)
- Literacy and the Learner

#### Sophomore

<table>
<thead>
<tr>
<th>Semester 4</th>
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<th>Recommended</th>
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<th>Credits</th>
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<tr>
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<td>3</td>
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Any lower or upper-division E subject code course.

Any lower or upper-division E subject code course.
<table>
<thead>
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<th>Course Code</th>
<th>Course Title</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E 270</td>
<td>Introduction to American Literature (GT-AH2)</td>
<td></td>
<td>X</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 342</td>
<td>Shakespeare I</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 343</td>
<td>Shakespeare II</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td></td>
<td>X</td>
<td></td>
<td>2</td>
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<tr>
<td>Elective</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 3A</td>
<td>(Biological and Physical Sciences)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AUCC 3B</td>
<td>(Arts and Humanities)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 3C</td>
<td>(Social and Behavioral Sciences)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 240</td>
<td>and E 276 or E 277 must be completed by the end of Semester 4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Must be admitted to Teacher Licensure Program by the end of Semester 4. | | | | | X

**Total Credits:** 13

**Junior**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 322</td>
<td>English Language for Teachers I</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 341</td>
<td>Literary Criticism and Theory</td>
<td></td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td></td>
<td>Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO 301D</td>
<td>must be completed by the end of Semester 5.</td>
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**Total Credits:** 16

<table>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E 401</td>
<td>Teaching Reading</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>E 405</td>
<td>Adolescents’ Literature</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>EDUC 463</td>
<td>Methods in Teaching Language Arts</td>
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</tr>
<tr>
<td></td>
<td>Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 401</td>
<td>must be completed by the end of Semester 6.</td>
<td></td>
<td></td>
<td>X</td>
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</table>

**Total Credits:** 16

**Senior**

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 402</td>
<td>Teaching Composition</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 460</td>
<td>Chaucer</td>
<td></td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>E 465</td>
<td>Topics in Literature and Language</td>
<td></td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>E 470</td>
<td>Individual Author</td>
<td></td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>English Elective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E 401</td>
<td>E 405 must be completed by the end of Semester 7.</td>
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</tbody>
</table>

**Total Credits:** 17

<table>
<thead>
<tr>
<th>Semester 8</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EDUC 485B</td>
<td>Student Teaching: Secondary</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td></td>
<td></td>
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</tbody>
</table>

**Total Credits:** 12

**Program Total Credits:** 120
# Major in English, Language Concentration

The Language concentration focuses on linguistics and TESL/TEFL. It is designed for students interested in all aspects of language and linguistics. It offers students the ability to study key theories in linguistics and second-language learning, functional aspects of language production and reception, and the impact of social and cultural contexts on language production and reception.

## Requirements

### Effective Fall 2015

For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>E 240</td>
<td>Introduction to Poetry</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 270</td>
<td>Introduction to American Literature (GT-AH2)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td>3B</td>
<td>6</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>7</td>
</tr>
<tr>
<td>Foreign Language&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>3-5</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>1B</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits**: 31-33

### Sophomore

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 276</td>
<td>Survey of British Literature I (GT-AH2)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>E 277</td>
<td>Survey of British Literature II (GT-AH2)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>PH *** Philosophy&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Liberal Arts/History Elective&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Foreign Language&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>3-5</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Science</td>
<td></td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td>6-8</td>
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</tbody>
</table>

**Total Credits**: 27-31

### Junior

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>E 326</td>
<td>Development of the English Language</td>
<td></td>
<td>3</td>
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</tbody>
</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 327</td>
<td>Syntax and Semantics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 328</td>
<td>Phonology, Morphology, and Lexis</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 329</td>
<td>Pragmatics and Discourse Analysis</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 341</td>
<td>Literary Criticism and Theory</td>
<td>4A,4B</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 342</td>
<td>Shakespeare I</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 343</td>
<td>Shakespeare II</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Foreign Language&lt;sup&gt;2&lt;/sup&gt;</td>
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<td></td>
<td>5</td>
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</table>
**Electives**

<table>
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<tr>
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</tbody>
</table>

**Total Credits**

<table>
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<td>27</td>
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**Senior**

Select one course from the following not taken in the junior year:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>E 327</td>
<td>Syntax and Semantics</td>
</tr>
<tr>
<td>E 328</td>
<td>Phonology, Morphology, and Lexis</td>
</tr>
<tr>
<td>E 329</td>
<td>Pragmatics and Discourse Analysis</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>E 460</td>
<td>Chaucer</td>
</tr>
<tr>
<td>E 465</td>
<td>Topics in Literature and Language</td>
</tr>
</tbody>
</table>

Foreign Language\(^2\)

Upper-Division English/Composition\(^5\)

Electives\(^6\)

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Credits</th>
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<tr>
<td>3-9</td>
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<table>
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<tr>
<td>29-35</td>
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<table>
<thead>
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<th>Program Total Credits:</th>
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<tbody>
<tr>
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</table>

1. Excludes E subject code courses.
2. This requirement must be met by completing the second year of one foreign language and the first year of another foreign language.
3. Select from the list of PHIL courses on English Department green sheet.
4. Select either one other course from the list of courses in AUCC 3D or one from the list of courses on the English department check sheet.
6. Select enough elective credits to bring the program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

English majors must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

**Freshman**

**Semester 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 270</td>
<td>Introduction to American Literature (GT-AH2)</td>
<td>X</td>
<td>3B</td>
<td></td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Arts and Humanities</th>
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<tbody>
<tr>
<td>3B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Biological and Physical Sciences</th>
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</thead>
<tbody>
<tr>
<td>3A</td>
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</table>

<table>
<thead>
<tr>
<th>Mathematics</th>
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</thead>
<tbody>
<tr>
<td>X</td>
</tr>
<tr>
<td>1B</td>
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<table>
<thead>
<tr>
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<tbody>
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**Semester 2**

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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E 240</td>
<td>Introduction to Poetry</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Arts and Humanities</th>
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</thead>
<tbody>
<tr>
<td>3B</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Biological and Physical Sciences</th>
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</thead>
<tbody>
<tr>
<td>3A</td>
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</tbody>
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<table>
<thead>
<tr>
<th>L*** *** Foreign Language</th>
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</thead>
<tbody>
<tr>
<td>3-5</td>
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</tbody>
</table>

AUCC 1B (MATH) and CO 150 must be completed at the end of Semester 2. X

<table>
<thead>
<tr>
<th>Total Credits</th>
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<tbody>
<tr>
<td>16-18</td>
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</tbody>
</table>

**Sophomore**

**Semester 3**

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 276</td>
<td>Survey of British Literature I (GT-AH2)</td>
<td>X</td>
<td>3B</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 277</td>
<td>Survey of British Literature II (GT-AH2)</td>
<td>X</td>
<td>3B</td>
<td></td>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Global and Cultural Awareness</th>
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</thead>
<tbody>
<tr>
<td>3E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social and Behavioral Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>3C</td>
</tr>
</tbody>
</table>

Select enough elective credits to bring the program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).
Major in English, Language Concentration

Liberal Arts/History Elective (Select from AUCC 3D or Department Checksheet)  3
Elective  3

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>L*** *** Foreign Language</td>
<td></td>
<td>3-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHIL*** Philosophy</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 3A (Biological and Physical Sciences), AUCC 3B (Arts and Humanities), AUCC 3C (Social and Behavioral Sciences), E 240, E 270, and E 276 or E 277, plus one course of L*** *** must be completed by the end of Semester 4.</td>
<td></td>
<td>X</td>
<td></td>
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</tbody>
</table>

| Total Credits | 15 |

<table>
<thead>
<tr>
<th>Junior</th>
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</thead>
<tbody>
<tr>
<td>Semester 5</td>
</tr>
<tr>
<td>Select one course from the following:</td>
</tr>
<tr>
<td>E 341 Literary Criticism and Theory</td>
</tr>
<tr>
<td>Select one course from the following:</td>
</tr>
<tr>
<td>E 342 Shakespeare I</td>
</tr>
<tr>
<td>E 343 Shakespeare II</td>
</tr>
<tr>
<td>L*** *** Foreign Language</td>
</tr>
</tbody>
</table>

| Total Credits | 14 |

| Semester 6 | Critical | Recommended | AUCC | Credits |
| E 326 Development of the English Language | | | 3 |
| Select one course from the following: | | 3 |
| E 327 Syntax and Semantics | | X |
| E 328 Phonology, Morphology, and Lexis | | X |
| E 329 Pragmatics and Discourse Analysis | | X |
| Electives | | 7 | |

| Total Credits | 13 |

<table>
<thead>
<tr>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 7</td>
</tr>
<tr>
<td>Select one course from the following:</td>
</tr>
<tr>
<td>E 460 Chaucer</td>
</tr>
<tr>
<td>E 465 Topics in Literature and Language</td>
</tr>
<tr>
<td>L*** *** Foreign Language</td>
</tr>
<tr>
<td>Upper-Division English/Composition Courses (See footnote on Concentration Requirements Tab)</td>
</tr>
</tbody>
</table>

| Total Credits | 17 |

| Semester 8 | Critical | Recommended | AUCC | Credits |
| Select one course from the following: | | 3 |
| E 327 Syntax and Semantics | | | | X |
| E 328 Phonology, Morphology, and Lexis | | | | X |
| E 329 Pragmatics and Discourse Analysis | | | | X |
| Upper-Division English/Composition Courses (See footnote on Concentration Requirements Tab) | | X | | 6 |
| Electives | | X | | 3-9 |
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

<table>
<thead>
<tr>
<th>Total Credits</th>
<th>Program Total Credits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-18</td>
<td>120</td>
</tr>
</tbody>
</table>

**Major in English, Literature Concentration**

The English Department offers a curriculum featuring critical study of literature, ancient through contemporary, in poetry, prose, and drama. Students will become familiar with major figures and forces, but also with non-traditional writers outside the established canon. Courses in literary theory will give students a sense of the wide variety of approaches that can be applied to the interpretation of texts. In all courses, students practice a number of different types of analytical and critical writing.

**Requirements**

**Effective Fall 2015**

For graduation, an English major must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>College Composition (GT-CO2)</td>
</tr>
<tr>
<td>E 240</td>
<td></td>
<td>Introduction to Poetry</td>
</tr>
<tr>
<td>E 270</td>
<td></td>
<td>Introduction to American Literature (GT-AH2)</td>
</tr>
<tr>
<td>Arts and Humanities¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 276</td>
<td></td>
<td>Survey of British Literature I (GT-AH2)</td>
</tr>
<tr>
<td>E 277</td>
<td></td>
<td>Survey of British Literature II (GT-AH2)</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philosophy²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English electives³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberal Arts/History electives⁴</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Junior**

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 300</td>
<td></td>
<td>Writing Arguments (GT-CO3)</td>
</tr>
<tr>
<td>CO 301A</td>
<td></td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
</tr>
<tr>
<td>CO 301B</td>
<td></td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
</tr>
<tr>
<td>CO 301C</td>
<td></td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
</tr>
<tr>
<td>CO 301D</td>
<td></td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
</tr>
<tr>
<td>E 341</td>
<td></td>
<td>Literary Criticism and Theory</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 342</td>
<td></td>
</tr>
<tr>
<td>E 343</td>
<td></td>
</tr>
<tr>
<td><strong>Second field⁵</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>Upper-Division English/Composition electives⁶</td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>
Major in English, Literature Concentration

Electives

| Total Credits | 9 |

Senior

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 460</td>
<td>Chaucer</td>
</tr>
<tr>
<td>E 465</td>
<td>Topics in Literature and Language</td>
</tr>
<tr>
<td>E 470</td>
<td>Individual Author</td>
</tr>
</tbody>
</table>

Second field

| Upper-Division electives | 6 |
| Electives | 12 |

Total Credits

Program Total Credits:

| 120 |

1 Excludes E subject code courses.
2 Select PHIL course from English Department check sheet.
3 Select any lower or upper-division E subject code course.
4 Select either one other course from the list of courses in All-University Core Curriculum (AUCC) 3D or one from the list of courses on the English Department check sheet.
5 The department requires majors to complete a second field. This may be met by completing the equivalent of the second semester of the second year course in a foreign language or by completing 12 hours of upper-division credit in a coherent field of study outside English.
6 The department requires literature concentrators to take 18 credits of upper-division E and/or CO subject code courses:
   3 credits must be in literatures of the British Isles before 1830 or in American or European literatures before 1900;
   3 credits must be in literatures of the British Isles after 1830 or in American or European literatures after 1900;
   3 credits must be in breakthroughs (ideological, racial, cultural, gendered);
   3 credits must be in genre courses.
7 See the department check sheet for the courses that fulfill these 4 categories.
8 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
English majors must attain a minimum grade point average of 2.000 in upper-division composition and English courses.

Freshman

Semester 1

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
</tr>
<tr>
<td>E 270</td>
<td>Introduction to American Literature (GT-AH2)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 240</td>
<td>Introduction to Poetry</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
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</table>

Sophomore

Semester 3

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 276</td>
<td>Survey of British Literature I (GT-AH2)</td>
<td>X</td>
<td>3B</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 15 |
Social and Behavioral Sciences 3C 3
Liberal Arts/History Elective (Select from AUCC 3D or Department Checksheet) 3
Elective 3

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 277</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E*** Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PHIL*** Philosophy Course</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AUCC 3A (Biological and Physical Sciences), AUCC 3B (Arts and Humanities), AUCC 3C (Social and Behavioral Sciences), E 240, E270, E 276 must be completed by the end of Semester 4.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
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</table>

**Junior**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CO 300</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CO 301A</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CO 301B</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CO 301C</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CO 301D</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>E 341</td>
<td>X</td>
<td></td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>Second Field Course</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 342</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>E 343</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Second Field Course</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division English/Composition Course (See footnote on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>E 341 must be completed by the end of Semester 6.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
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</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>E 460</td>
<td></td>
<td></td>
<td>4C</td>
<td>3</td>
</tr>
<tr>
<td>E 465</td>
<td></td>
<td></td>
<td>4C</td>
<td>3</td>
</tr>
<tr>
<td>E 470</td>
<td></td>
<td></td>
<td>4C</td>
<td>3</td>
</tr>
<tr>
<td>Second Field Course</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division Electives</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td></td>
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<td>15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Field Course</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits
Program Total Credits: 120

Minor in English

When visiting the English Department office to officially declare an English or English-related minor (http://english.colostate.edu/undergraduate/english-related-minors), students will be provided with a course guide for that minor. To speak with an advisor regarding your minor, contact Prof. Tobi Jacobi, by phone at (970) 491-3344, by email at tjacobi@colostate.edu, or in person during office hours or by appointment in Eddy Hall, Room 349.

For information about English and Composition course offerings and registration procedures for the upcoming semester or summer session, please view the Rambler (http://english.colostate.edu/undergraduate/publications), the Department's advising newsletter.

English Minor

The English minor is designed for students with interests in English studies who do not want to complete an English major. With very few exceptions, the minor allows students to choose any English or composition courses to create a program of study specific to their needs and interests. Minimum of 21 credits in courses with E prefix, at least 12 of which must be upper division.

The English Department also offers the Linguistics and Culture Interdisciplinary Minor.

Requirements

Effective Spring 1996

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

CO 150, E 487A, and E 487B may not count toward the minor. CO 300, CO 301A, CO 301B, CO 301C, CO 301D, CO 302, and CO 401 may count toward the minor. A minimum of 6 credits must be taken at CSU.

Master of Arts in English, Creative Nonfiction Specialization

Requirements

Effective Fall 2012

- Completion of the program of study listed below
- Oral defense of your thesis.

First Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 640C</td>
<td>Graduate Writing Workshop: Essay</td>
<td>2-3</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td>2-3</td>
</tr>
<tr>
<td>E 640C</td>
<td>Graduate Writing Workshop: Essay</td>
<td></td>
</tr>
<tr>
<td>E 641</td>
<td>Nonfiction Workshop</td>
<td></td>
</tr>
</tbody>
</table>

Second Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 640C</td>
<td>Graduate Writing Workshop: Essay</td>
<td>2-3</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td>2-3</td>
</tr>
<tr>
<td>E 640C</td>
<td>Graduate Writing Workshop: Essay</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>E 641</td>
<td>Nonfiction Workshop</td>
<td></td>
</tr>
<tr>
<td>E 642</td>
<td>Writing Hypertexts</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Select one of the following:</strong> <strong>2-3</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Out-of-department course<strong>4</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. English elective<strong>6</strong></td>
<td></td>
</tr>
<tr>
<td>E 687A</td>
<td>Internship: Teaching College English</td>
<td></td>
</tr>
<tr>
<td>E 687B</td>
<td>Internship: Composition Supervision/Administration</td>
<td></td>
</tr>
<tr>
<td>E 687C</td>
<td>Internship: Literary Editing</td>
<td></td>
</tr>
<tr>
<td>E 687E</td>
<td>Internship: Teaching ESL, K-12</td>
<td></td>
</tr>
<tr>
<td>E 687H</td>
<td>Internship: ESL-Adult Learning</td>
<td></td>
</tr>
<tr>
<td>E 687I</td>
<td>Internship: ESL- Supervision/Administration</td>
<td></td>
</tr>
<tr>
<td>E 687J</td>
<td>Internship: Arts Administration in Literature</td>
<td></td>
</tr>
<tr>
<td>E 687K</td>
<td>Internship: Public Education</td>
<td></td>
</tr>
<tr>
<td>E 687L</td>
<td>Internship: Computers and Writing</td>
<td></td>
</tr>
<tr>
<td>E 687M</td>
<td>Internship: Writing/Editing for Specific Purposes</td>
<td></td>
</tr>
<tr>
<td>E 699<strong>7</strong></td>
<td>Thesis</td>
<td><strong>6</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>12-15</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Program Total Credits:</strong></td>
<td><strong>31-35</strong></td>
</tr>
</tbody>
</table>

A minimum of 31 credits are required to complete this program.

1. Course may be repeated for a maximum of 11 credits.
2. Required for all GTAs.
3. Choose a 500-600-level English course.
4. Choose a relevant course outside department 300-level or above.
5. Selection must be approved by advisor.
6. Course based on final thesis topic with advisor approval.
7. No more than six credits may count toward the degree.

Master of Arts in English, Plan A, Literature Specialization

Requirements
Effective Fall 2011

First Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 600A</td>
<td>Research Methods/Theory: Literary Scholarship</td>
<td><strong>3</strong></td>
</tr>
<tr>
<td>E 615</td>
<td>Reading Literature-Recent Theories</td>
<td><strong>3</strong></td>
</tr>
<tr>
<td>E 635</td>
<td>Critical Studies in Literature and Culture</td>
<td><strong>3</strong></td>
</tr>
<tr>
<td></td>
<td><strong>One course from outside the English department</strong></td>
<td><strong>3</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Electives</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
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Second Year

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
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<td>Pre-20th century literature course<strong>3</strong></td>
<td><strong>3</strong></td>
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<tr>
<td></td>
<td><strong>Electives</strong></td>
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<td>E 699</td>
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</tr>
<tr>
<td></td>
<td><strong>Program Total Credits:</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

A minimum of 32 credits are required to complete this program.

1. Students with an undergraduate major other than English may waive this requirement and select an additional 3 credits of elective courses instead.
2. Up to 9 credit hours outside the department allowed at the 300-level or above only.
3. One course in pre-20th century literature is required at the 500-level or above. Select course in consultation with graduate advisor.

In addition to required coursework, the following is required:

- Pass an oral defense of the thesis.
- Courses used to complete another degree cannot be counted toward the Masters degree.
- A minimum of 24 credits applied to a M.A. degree must be earned at CSU. Of these, at least 21 must be earned after admission to the program.
- Graduate courses taken at CSU prior to admission to the Graduate School can be applied to a M.A. degree if the grade earned is B or higher.
- At least 16 credits earned at CSU and applied to a M.A. degree must be at the 500-level or above; of these credits, at least 12 must be in "regular" courses. English courses considered to be other than "regular" include E 684A, E 684B, E 684C, E 684D, E 684E, E 687A, E 687B, E 687C, E 687E, E 687H, E 687I, E 687J, E 687K, E 687L, E 687M, E 694, E 695, E 696, E 698, and any courses graded pass/fail; see the Graduate and Professional Bulletin (http://graduateschool.colostate.edu/current-students/bulletin.aspx) for more detailed information.
- Courses transferred to a M.A. program must have a grade of B or higher and must have a CSU equivalent at the 500-level or higher.
- Credits used to fulfill requirements for previously earned degrees are not accepted.
- Up to nine credits of coursework for a M.A. degree can come from CSU programs outside the English department. These credits must be at the 300-level or higher.
- A maximum of two credits of E 695 or E 698 can count toward an M.A. degree.
- A maximum of two credits of E 695 can count toward an M.A. degree.
A maximum of six credits of E 699 can count toward a Plan A, M.A. degree.

With the exception of specified courses in the English Education M.A., all courses taken in the English department and applied to a M.A. degree must be taken at the 500-level or above.

Master of Arts in English, Plan B, Literature Specialization

Requirements

Effective Fall 2011

First Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>E 600A</td>
<td>Research Methods/Theory: Literary Scholarship</td>
<td>3</td>
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<tr>
<td>E 615</td>
<td>Reading Literature- Recent Theories</td>
<td>3</td>
</tr>
<tr>
<td>E 635</td>
<td>Critical Studies in Literature and Culture</td>
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<td>One course from outside the English department</td>
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<td>Electives</td>
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Second Year

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<td>Total Credits</td>
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Program Total Credits: 35

A minimum of 35 credits are required to complete this program.

1. Students with an undergraduate major other than English may waive this requirement and select an additional 3 credits of elective courses instead.

2. Up to 9 credit hours outside the department allowed at the 300-level or above only.

3. One course in pre-20th century literature is required at the 500-level or above. Select course in consultation with advisor.

In addition to required coursework, the following is required:

- Pass an oral defense of the final project.
- Courses used to complete another degree cannot be counted toward the Masters degree.
- A minimum of 24 credits applied to an M.A. degree must be earned at CSU. Of these, at least 21 must be earned after admission to the program.
- Graduate courses taken at CSU prior to admission to the Graduate School can be applied to an M.A. degree if the grade earned is B or higher.
- At least 16 credits earned at CSU and applied to an M.A. degree must be at the 500-level or above; of these credits, at least 12 must be in “regular” courses. English courses considered to be other than “regular” include E 684A, E 684B, E 684C, E 684D, E 684E, E 687A, E 687B, E 687C, E 687E, E 687H, E 687L, E 687J, E 687K, E 687L, E 687M, E 694, E 695, E 698, E 699, and any courses graded pass/fail; see the Graduate Bulletin (http://graduateschool.colostate.edu/current-students/bulletin.aspx) for more detailed information.
- Courses transferred to an M.A. program must have a grade of B or higher and must have a CSU equivalent at the 500-level or higher. Credits used to fulfill requirements for previously earned degrees are not accepted.
- Up to nine credits of coursework for an M.A. degree can come from CSU programs outside the English department. These credits must be at the 300-level or higher. (English Education students in Plan B may count up to 12 credits.)
- A maximum of two credits of E 695 can count toward an M.A. degree.
- A maximum of two credits of E 698 can count toward an M.A. degree.
- No E 699 credits can count toward a Plan B M.A. degree.
- With the exception of specified courses in the English Education M.A., all courses taken in the English department and applied to an M.A. degree must be taken at the 500-level or above.

Master of Arts in English, Plan A, TESL/TEFL Specialization

Requirements

Effective Spring 2014

<table>
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<th>Code</th>
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<tr>
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<tr>
<td>E 515</td>
<td>Syntax for ESL/EFL</td>
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<tr>
<td>E 526</td>
<td>Teaching English as a Foreign/Second Language</td>
<td>3</td>
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<tr>
<td>E 527</td>
<td>Theories of Foreign/Second Language Learning</td>
<td>3</td>
</tr>
<tr>
<td>E 638</td>
<td>Assessment of English Language Learners</td>
<td>3</td>
</tr>
<tr>
<td>E 684B</td>
<td>Supervised College Teaching: ESL</td>
<td>2</td>
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<tr>
<td>Additional graduate credits 1)</td>
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<td>E 699</td>
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</tr>
<tr>
<td>Total Credits</td>
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<td>31</td>
</tr>
</tbody>
</table>

A minimum of 31 credits are required to complete this program.

1) A course in research methods in English is highly recommended. Select courses with approval of advisor and graduate committee.

Master of Arts in English, Plan B, TESL/TEFL Specialization

Requirements

Effective Spring 2014

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>E 514</td>
<td>Phonology/Morphology-ESL/EFL</td>
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<td>E 515</td>
<td>Syntax for ESL/EFL</td>
<td>3</td>
</tr>
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</table>
A minimum of 33 credits are required to complete this program.

A course in research methods in English is highly recommended. Select courses with approval of advisor and graduate committee.

Department of Ethnic Studies

Office in Eddy Hall, Room 202
(970) 491-2418
etnicstudies.colostate.edu (http://ethnicstudies.colostate.edu)

Professor Irene Vernon, Chair

Undergraduate Majors

• Major in Ethnic Studies
  • Women’s Studies Concentration

Minors

• Minor in Ethnic Studies

Interdisciplinary Minors

• Women’s Study Interdisciplinary Minor

Graduate

Graduate Program in Ethnic Studies

The Department of Ethnic Studies seeks to teach students to understand the unique and interlocking experiences of racially marginalized groups and to analyze how race intersects with other forces of social differentiation, such as gender, sexuality, and class, in national and international contexts. The program recognizes the importance not only of the history of racial exclusion and marginalization but also the creative ways in which various racial groups sustain their humanity through cultural preservation, transference, and renewal. Ethnic Studies is committed to nurturing students to become culturally aware, astute, civic-minded individuals who strive to strengthen the communities in which they reside. Because the study of ethnic groups intrinsically reveals how race structures life chances and opportunities, the scholarly orientation of the department reflects a commitment to meaningful changes in public policy and social life. The department offers graduate-level education to prepare students as leaders in the field of ethnic studies.

Students interested in earning a Master of Arts degree in Ethnic Studies should refer to the Graduate and Professional Bulletin and the Department of Ethnic Studies (http://ethnicstudies.colostate.edu).

Certificate

• Gender, Power and Difference

Master Programs

• Master of Arts in Ethnic Studies, Plan A
• Master of Arts in Ethnic Studies, Plan B

Interdisciplinary Studies Programs

• Women’s Study Interdisciplinary Studies Program (This program is being discontinued effective Spring 2018. No new students are being accepted. Students interested in this area of study should contact the department of Ethnic Studies (http://ethnicstudies.colostate.edu) for more information regarding a new graduate certificate in Gender, Power and Difference, pending final approval for accepting students in Spring 2017.)

Courses

Ethnic Studies (ETST)

ETST 100 Introduction to Ethnic Studies (GT-SS3) Credits: 3 (3-0-0)
Course Description: Key concepts, theories, and historical experiences that form the basis of scholarly work in comparative ethnic studies, domestically and internationally.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 110 Blacks in Higher Education Credit: 1 (0-0-1)
Course Description: Contemporary issues of Blacks in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Black Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 120 Native Americans in Higher Education Credit: 1 (0-0-1)
Course Description: Contemporary issues of Native Americans in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Native American Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ETST 130 West Africa in Global and Local Perspective Credit: 1 (1-0-0)
Course Description: Sociopolitical and historical perspective of social and cultural issues in contemporary Ghana, West Africa, and connections to the African diaspora.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 201 Introduction to Queer Studies Credits: 3 (3-0-0)
Course Description: Intersectional framework for understanding historical and contemporary applications of queer theory and queer studies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 205 Ethnicity and the Media (GT-SS3) Credits: 3 (3-0-0)
Course Description: Ethnic representation across time as represented in auto/biography, fiction, poetry, and popular media.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 206 Border Crossings: People/Politics/Culture (GT-SS3) Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial discourse, politics of representation and epistemology of “location” it has produced: first and third world.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 234 Introduction to Native American Literature Credits: 3 (3-0-0)
Also Offered As: E 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 234 and E 234.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 239 Introduction to Chicano Literature Credits: 3 (3-0-0)
Also Offered As: E 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 239 and E 239.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 240 Native American Cultural Experience (GT-AH2) Credits: 3 (3-0-0)
Course Description: Exploration of Native lives and expressions through examination of Native architecture, art, music, film, activism, and literature.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 250 African American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 250 and HIST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 252 Asian-American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 252 and HIST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 253 Chicana/o History and Culture (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical study of Chicana/o/Mexicana/o people and culture from Spanish colonization to beginning of 20th century.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 254 La Chicana in Society Credits: 3 (3-0-0)
Course Description: Historical contributions of Chicana women and current gender issues in Chicano communities in the US.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 255 Native American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: HIST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 255 and HIST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 256 Border Crossings: People/Politics/Culture (GT-SS3) Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial discourse, politics of representation and epistemology of “location” it has produced: first and third world.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).
ETST 261 Latina/o Populations in the U.S. Credits: 3 (3-0-0)
Course Description: Historical processes and sociocultural phenomena that define Latina/o populations in the U.S.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 300 Queer Studies and Women of Color Credits: 3 (3-0-0)
Course Description: Historical/contemporary analysis of the contributions of women of color to queer studies; racialized sexual/gender identities; written and cultural works.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 310 African-American Studies Credits: 3 (3-0-0)
Course Description: Meaning of African American studies in context of American higher education; historical development of such studies; perceptions and misperceptions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 314 Inclusive Sports Organizations Credits: 3 (3-0-0)
Course Description: Issues of diversity and inclusion across U.S. and international sport organizations to advance sport industries.
Prerequisite: None.
Registration Information: Freshman not allowed.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 320 Ethnicity and Film: Asian-American Experience Credits: 3 (3-0-0)
Course Description: Asian American film image and film representation through both mainstream and independent movies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 324 Asian-Pacific Americans and the Law Credits: 3 (3-0-0)
Course Description: Legal history of Asian Pacific Americans examined through case studies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 330 African American Resistance and Self-Creation Credits: 3 (3-0-0)
Course Description: African American resistance to dehumanization and the creation of a positive image.
Prerequisite: ETST 000 to 99999 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 332 Contemporary Chicana/o Issues Credits: 3 (3-0-0)
Course Description: Current Chicana/o issues including conquest, immigration, urbanization, health in context of societal trends.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 352 Indigenous Women, Children, and Tribes Credits: 3 (3-0-0)
Course Description: Historical and contemporary lives of women, children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 352 and SOWK 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 354 Black Cinema and Media Credits: 3 (3-0-0)
Course Description: African American efforts to depict themselves in films and other media to counter often problematic mainstream depictions.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 364 Asian American Social Movements, 1945-Present Credits: 3 (3-0-0)
Also Offered As: HIST 364.
Course Description: Historical relationships between Asian American and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both ETST 364 and HIST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 365 Global Environmental Justice Movements Credits: 3 (3-0-0)
Course Description: How the world’s poor and minorities self-empower to challenge institutional racism and government apathy in order to secure basic environmental goods.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 370 Caribbean Identities Credits: 3 (3-0-0)
Course Description: Development of Caribbean identities from the arrival of Amerindian groups to the abolition of slavery in the nineteenth century.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 371 The Modern Caribbean Credits: 3 (3-0-0)
Course Description: Modern political and socio-economic developments in the Caribbean with emphasis on race, ethnicity, and gender.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 377  African Americans in Sports  Credits: 3 (3-0-0)
Course Description: Sociocultural and historical dimensions of African Americans in sports.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2 required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382  Italian Ethnic Identity, Culture, and Gender  Credits: 3 (2-0-1)
Also Offered As: LGEN 382.
Course Description: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 404  Race Formation in the United States  Credits: 3 (3-0-0)
Course Description: Concept of race as a social construct in the shaping of U.S. character, values, and institutions.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 405  Ethnicity, Class, and Gender in the U.S.  Credits: 3 (3-0-0)
Course Description: Roles of and interconnections among ethnicity, class, and gender for various groups in the United States.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 410  African American Periods and Personalities  Credits: 3 (3-0-0)
Course Description: Historical moments, movements, and men and women who have helped shape the African American heritage.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 411  Black Feminism(s)  Credits: 3 (3-0-0)
Course Description: History and trajectory of Black feminist thought from the nineteenth century to the present.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 412  Africa and African Diaspora  Credits: 3 (3-0-0)
Course Description: Interdisciplinary investigation of retention, transformation, and creation of culture in plantation economies of Americas.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 413  Queer Creative Expressions  Credits: 3 (3-0-0)
Course Description: Analysis of queer creative expressions within sociopolitical discourse and cultural works, with an emphasis on critical, queer feminist theory.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 414  Development in Indian Country  Credits: 3 (3-0-0)
Also Offered As: ANTH 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian country.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 414 and ANTH 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 416  African-American Literature  Credits: 3 (3-0-0)
Also Offered As: E 422.
Course Description: African-American literature as a distinct tradition of writing and protest.
Prerequisite: None.
Registration Information: Credit not allowed for both E 422 and ETST 422.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 425  Indigenous Film and Video  Credits: 3 (3-0-0)
Course Description: Historical and contemporary analysis of film featuring indigenous peoples.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 430  Latina/o Creative Expression  Credits: 3 (3-0-0)
Course Description: Creative expression in literature, art, theatre, music: approach to understanding experiences of various Chicana/o/Latina/o groups in the U.S.
Prerequisite: None.
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 432  Latina/o Routes to Empowerment  Credits: 3 (3-0-0)
Course Description: Critical examination of political and economic strategies used to incorporate Chicana/o/Latina/o groups into U.S. society.
Prerequisite: None.
Registration Information: Junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ETST 438  Native American Literature  Credits: 3 (3-0-0)
Also Offered As: E 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 438 and E 438.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 444  Federal Indian Law and Policy  Credits: 3 (3-0-0)
Also Offered As: SOC 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 444 and SOC 444.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 454  Chicano/a Film and Video  Credits: 3 (2-2-0)
Also Offered As: SPCM 454.
Course Description: Emergence of Chicano/a cinema from a place of displacement, resistance, and affirmation found in contemporary Chicano/a film, video.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ETST 454 and SPCM 454.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 484  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Interdisciplinary ethnic studies research methods.
Prerequisite: None.
Registration Information: Written consent of instructor. May be taken only once. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 492  Seminar  Credits: 3 (0-0-3)
Course Description: Research ethics, methodology, theory, and writing in ethnic studies.
Prerequisite: ETST 100 and ETST 101 to 481 - at least 18 credits.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 493  Ethnic Studies Research Methods and Writing  Credits: 3 (3-0-0)
Course Description: Research ethics, methodology, theory, and writing in ethnic studies.
Prerequisite: ETST 100 and ETST 101 to 481 - at least 18 credits.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 495  Independent Study  Credits: Var[1-18] (0-0-9)
Course Description: Study of specific topics in ethnic studies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 496  Group Study  Credits: Var[1-3] (0-0-0)
Course Description: Study of specific topics in ethnic studies.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 501  Ethnic Studies History and Theory  Credits: 3 (3-0-0)
Course Description: History and theory of study of racial and ethnic formation, identity, and politics.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 502  Research Methods  Credits: 3 (3-0-0)
Course Description: Interdisciplinary ethnic studies research methods.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 503  Contemporary Ethnic Studies Issues  Credits: 3 (3-0-0)
Course Description: Contemporary ethnic studies issues in the United States and abroad.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 510  Ethnicity, Race, and Health Disparities in U.S.  Credits: 3 (3-0-0)
Course Description: Health status of ethnic/racial populations; cultural dimensions that underlie health and health disparities.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 520  Race and U.S. Social Movements  Credits: 3 (3-0-0)
Course Description: Intersections of race, class, gender, and sexuality which structure life chances and mobilize movements for rights, recognition, and resources.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 531  Latina/o Politics in the U.S.  Credits: 3 (3-0-0)
Course Description: Impact of Latina/o politics on the U.S. political system by examining Latina/o political mobilization patterns and behaviors.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 535  Chicana Feminism: Theory and Form  Credits: 3 (3-0-0)
Course Description: Different forms of Chicana feminism as produced by Chicana scholars, poets, artists, and activists, from historical and contemporary accounts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 540  Race in Latin America  Credits: 3 (0-0-3)
Also Offered As: SPCM 540.
Course Description: Examination of race in Latin America and its intersection with ethnicity, class, gender, and sexuality.
Prerequisite: None.
Registration Information: Admission to Ethnic Studies graduate program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 544  National Identities and Nation Building  Credits: 3 (3-0-0)
Also Offered As: POLS 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 544 and POLS 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 545  Immigration and Citizenship in U.S. History  Credits: 3 (3-0-0)
Course Description: Comparative survey of immigration and citizenship debates in the U.S. since the 19th century, with a focus on the politics of racial formations.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 550  Indigenous Law, Policy, and Peoples  Credits: 3 (3-0-0)
Course Description: Laws and policies impacting indigenous women, children, families, and communities in North America, New Zealand, and Australia.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 560  Race, Ethnicity, and Higher Education  Credits: 3 (3-0-0)
Course Description: Historical and contemporary experiences of people of color as students, faculty, and staff in higher education in the United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 573  Critical Disability Studies  Credits: 3 (3-0-0)
Course Description: Critical disability studies focusing on the social and cultural constructions of disability within intersectional frameworks.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 687  Internship  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
The programs of study interrogate how these socially constructed ideas impact distribution of social goods, affect life chances, shape identities and worldviews, and reproduce social inequalities. Drawing from interdisciplinary and comparative theoretical frameworks, we bring to bear issues of power, privilege, and social justice pertinent to the experiences of diverse populations in the U.S. and abroad. We are especially committed to nurturing civic-minded and culturally informed students who strive to strengthen the communities in which they reside.

In support of the land-grant mission of CSU, Ethnic Studies engages with communities on and off campus in order to effect meaningful change in public policy and social life.

**Learning Outcomes**

Upon completion of the programs of study, students will demonstrate:

- An understanding of the key concepts shaping the experiences of various racial and ethnic groups in the United States and abroad.
- Familiarity with social histories and experiences of racial and ethnic groups.
- Effective oral communication, writing, and research skills.
- An increase in critical thinking, intellectual, and personal growth.
- An understanding of the value of social consciousness and personal responsibility.

**Potential Occupations**

Both theoretical understandings of and practical experience in cross-cultural and inter-ethnic relations are invaluable in today's world. Ethnic Studies graduates work in the following fields and occupations. Education: K-12 and adult education (e.g. refugee/immigrant education, diversity training in the private sector); human social services including counseling, health care, and civil service; federal, state, tribal, and local government, and community service; natural resources development and technology transfer; practices, economics, and law in ethnic contexts; communications media such as newspaper, radio, video, and television; archival and museum studies; non-profit agencies; and advanced studies including graduate programs in the social sciences and professional programs (e.g. law, social work).

**Concentrations**

- Women's Studies Concentration

**Requirements**

**Effective Fall 2015**

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

Students in the Ethnic Studies major must earn a minimum grade of C (2.000) for all Ethnic Studies courses required for the major.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
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<td>College Composition (GT-CO2)</td>
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<td>3</td>
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<tr>
<td>ETST 100</td>
<td>Introduction to Ethnic Studies (GT-SS3)</td>
<td>3E</td>
<td>3</td>
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<td>Arts and Humanities</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<td>Historical Perspectives</td>
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<tr>
<td>Mathematics</td>
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<td>Electives</td>
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<tr>
<td><strong>Total Credits</strong></td>
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<td></td>
<td><strong>27</strong></td>
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</tbody>
</table>
Sophomore

Select one course from the following:

ETST 208/ART 208  Introduction to Native American Literature  3
ETST 234/E 234  Native American Cultural Experience (GT-AH2)  3B
ETST 240  Native American History (GT-HI1)  3D
ETST 255/HIST 255  Indigenous Women, Children, and Tribes
ETST 240  Native American Cultural Experience (GT-AH2)  3B
ETST 352/SOWK 352  Development in Indian Country
ETST 414/ANTH 414  Indigenous Film and Video
ETST 425  Native American Literature
ETST 444/SOC 444  Federal Indian Law and Policy

Select one course from the following:

ETST 250/HIST 250  African American History (GT-HI1)  3D
ETST 310  African-American Studies
ETST 354  Black Cinema and Media
ETST 410  African American Periods and Personalities
ETST 411  Black Feminism(s)
ETST 412  Africa and African Diaspora

Select one course from the following:

ETST 239/E 239  Introduction to Chicano Literature
ETST 253  Chicana/o History and Culture (GT-HI1)  3E
ETST 254  La Chicana in Society
ETST 261  Latina/o Populations in the U.S.
ETST 332  Contemporary Chicana/o Issues
ETST 430  Latina/o Creative Expression
ETST 432  Latina/o Routes to Empowerment
ETST 454/SPCM 454  Chicano/a Film and Video

Select one course from the following:

ETST 252/HIST 252  Asian-American History (GT-HI1)  3D
ETST 320  Ethnicity and Film: Asian-American Experience
ETST 324  Asian-Pacific Americans and the Law
ETST 364/HIST 364  Asian American Social Movements, 1945-Present

Select one course from the following:

ETST 205  Ethnicity and the Media (GT-SS3)  3E
ETST 256  Border Crossings: People/Politics/Culture (GT-SS3)  3E
ETST 300  Queer Studies and Women of Color
ETST 319/ANTH 319  Ethnicity and Film: Asian-American Experience
ETST 365  Global Environmental Justice Movements
ETST 370  Caribbean Identities
ETST 371  The Modern Caribbean
ETST 382/LGEN 382  Italian Ethnic Identity, Culture, and Gender
ETST 413  Queer Creative Expressions

Advanced Writing  2  3
Minor/Interdisciplinary Minor1
Biological and Physical Sciences  3A  4
Electives

Total Credits  31

Junior

Select one from the following:

ETST 404  Race Formation in the United States  4A,4B
Select 12 credits from the following in consultation with advisor:  

- African American courses  
- Asian/Pacific American courses  
- Chicano(a)/Latino(a) courses  
- Native American courses  
- Global Ethnic Studies (select from the following)  
  - ANTH 319/ETST 319: Latin American Peasantry  
  - ETST 205: Ethnicity and the Media (GT-SS3)  
  - ETST 256: Border Crossings: People/Politics/Culture (GT-SS3)  
  - ETST 300: Queer Studies and Women of Color  
  - ETST 365: Global Environmental Justice Movements  
  - ETST 370: Caribbean Identities  
  - ETST 371: The Modern Caribbean  

Minor/Interdisciplinary Minor  
Social and Behavioral Sciences  
Electives  

Total Credits  

Senior  

- ETST 493: Ethnic Studies Research Methods and Writing  
- Minor/Interdisciplinary Minor  
- Electives  

Total Credits  

Program Total Credits:  

---

1. Students must complete a minor/interdisciplinary minor consistent with the student’s program of study. A minimum total of 21 credits, 12 of which are upper division, is required.

2. Seniors may select with advisor approval ETST 541, ETST 550, ETST 531, ETST 535.

3. Seniors may select with advisor approval from ETST 500-level courses.

4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

---

**Learning Outcomes**

Upon completion of the program of study, students will demonstrate:

- Knowledge of academic disciplines from feminist and intersectional perspectives
- An understanding of the historic and contemporary contributions of women of all cultures
- Effective oral communication, writing, and research skills
- An increase in critical thinking, intellectual, and personal growth
- A critical ideological understanding regarding women and gender implicit in social institutions

---

**Potential Occupations**

Contemporary career opportunities can be directly enhanced by students who have a women’s studies background. Students acquire jobs in the non-profit sector, such as international relief agencies, domestic violence agencies, homeless shelters, after school programs, and children and family services. Other fields our students have entered include public relations, counseling, union organizing, public policy and research, victim advocacy, and human/civil rights. In several areas such as journalism, communication, business, law, education, and human services, it is
now common to choose a career that has a direct focus on women and gender.

In areas that have not traditionally focused on women and gender, an awareness of the history and culture of feminism, women and the intersections of gender, race, class, and sexism can enhance a person’s ability to cope with dilemmas and issues related to gender and sex that arise in the workplace. In addition, students in women’s studies have the unique opportunity to apply insights from course work to their own lives, helping them to make more informed choices about careers, education, relationships, and community participation.

**Requirements**

**Effective Fall 2015**

Students in the Ethnic Studies major must earn a minimum grade of C (2.00) for all Ethnic Studies courses required for the major.

### Freshman

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<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<td>CO 150</td>
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<tr>
<td>ETST 100</td>
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<tr>
<td>SPCM 200</td>
<td></td>
<td>3</td>
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<tr>
<td>WS 200</td>
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<tr>
<td>Arts and Humanities</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>Mathematics</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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</table>

**Elective**

Total Credits: 30

### Sophomore

Select two courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<td>E 234/ETST 234</td>
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<tr>
<td>E 239/ETST 239</td>
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<tr>
<td>ECON 211</td>
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<td>ETST 201</td>
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<td>ETST 205</td>
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<td>ETST 240</td>
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<tr>
<td>ETST 252/HIST 252¹</td>
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<td>ETST 253</td>
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<td>ETST 255/HIST 255¹</td>
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<td>ETST 256</td>
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<td>Electives</td>
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Total Credits: 30

### Junior

Select two courses from the following:

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<tr>
<th>Course</th>
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<td>ANTH 319</td>
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<td>ANTH 338</td>
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<tr>
<td>ETST 310</td>
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<tr>
<td>ETST 320</td>
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<td>ETST 324</td>
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</tr>
<tr>
<td>ETST 332</td>
<td>Contemporary Chicana/o Issues</td>
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<tr>
<td>ETST 352/SOWK 352</td>
<td>Indigenous Women, Children, and Tribes</td>
<td></td>
</tr>
<tr>
<td>ETST 354</td>
<td>Black Cinema and Media</td>
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<tr>
<td>ETST 365</td>
<td>Global Environmental Justice Movements</td>
<td></td>
</tr>
<tr>
<td>ETST 370</td>
<td>Caribbean Identities</td>
<td></td>
</tr>
<tr>
<td>ETST 371</td>
<td>The Modern Caribbean</td>
<td></td>
</tr>
<tr>
<td>ETST 404</td>
<td>Race Formation in the United States</td>
<td></td>
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<tr>
<td>PSY 437</td>
<td>Psychology of Gender</td>
<td></td>
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<tr>
<td>WS 495</td>
<td>Independent Study</td>
<td></td>
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Select one course from the following: 3

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
</tr>
<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
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Select one from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>E 330</td>
<td>Gender in World Literature</td>
</tr>
<tr>
<td>E 332</td>
<td>Modern Women Writers</td>
</tr>
<tr>
<td>E 334</td>
<td>Gay and Lesbian Literature</td>
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Select one course from the following: 3

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>HIST 320</td>
<td>Women and Gender in Europe, 1450-1789</td>
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<td>HIST 358</td>
<td>American Women’s History to 1800</td>
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<td>HIST 359</td>
<td>American Women’s History Since 1800</td>
</tr>
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<td>PSY 327</td>
<td>Psychology of Women</td>
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<tr>
<td>SPCM 335</td>
<td>Gender and Communication</td>
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Electives 15-17

Total Credits 28-30

Senior

Select two courses from the following not previously taken: 6

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 319</td>
<td>Latin American Peasantries</td>
</tr>
<tr>
<td>ANTH 338</td>
<td>Gender and Anthropology</td>
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<td>ETST 310</td>
<td>African-American Studies</td>
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<td>ETST 320</td>
<td>Ethnicity and Film: Asian-American Experience</td>
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<td>Asian-Pacific Americans and the Law</td>
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<td>Contemporary Chicana/o Issues</td>
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<td>Indigenous Women, Children, and Tribes</td>
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<td>Black Cinema and Media</td>
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<td>Global Environmental Justice Movements</td>
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<td>ETST 371</td>
<td>The Modern Caribbean</td>
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<td>Race Formation in the United States</td>
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<td>Multiculturalism and the Media</td>
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<td>Psychology of Gender</td>
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<td>Independent Study</td>
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<td>ETST 405</td>
<td>Ethnicity, Class, and Gender in the U.S.</td>
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<td>ETST 493</td>
<td>Ethnic Studies Research Methods and Writing</td>
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<td>IE 470</td>
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<td>WS 472</td>
<td>Seminar in Women’s Studies-Social Sciences</td>
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Electives 2 14-16

Total Credits 30-32

Program Total Credits: 120
ETST 252/HIST 252 or ETST 255/HIST 255 may double count for both All-University Core Curriculum (AUCC) 3D and major requirements. Students selecting this option must take an additional elective course to bring the program total to 120 credits.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Students in the Ethnic Studies major must earn a minimum grade of C (2.000) for all Ethnic Studies courses required for the major.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<td>ETST 100</td>
<td>Introduction to Ethnic Studies (GT-SS3)</td>
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<td>Biological and Physical Sciences</td>
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<td>Historical Perspectives</td>
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### Sophomore

<table>
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<tr>
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<td>ETST 254</td>
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</table>

Select two courses from the following:
- ECON 211 Gender in the Economy (GT-SS1) 3E
- ETST 201 Introduction to Queer Studies
- ETST 205 Ethnicity and the Media (GT-SS3) 3E
- ETST 208/ART 208 Introduction to Native American Literature
- ETST 234/ET 234 Introduction to Chicano Literature
- ETST 240 Native American Cultural Experience (GT-AH2) 3B
- ETST 252/HIST 252 Asian-American History (GT-HI1) 3D
- ETST 253 Chicana/o History and Culture (GT-HI1) 3E
- ETST 255/HIST 255 Native American History (GT-HI1) 3D
- ETST 256 Border Crossings: People/Politics/Culture (GT-SS3) 3E
- ETST 261 Latina/o Populations in the U.S.

Electives 6

| Total Credits | | | | 15 |

### Semester 4

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### Junior

**Semester 5**

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<td>ETST 320</td>
<td>Ethnicity and Film: Asian-American Experience</td>
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<td>Asian-Pacific Americans and the Law</td>
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<td>African American Resistance and Self-Creation</td>
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<td>ETST 332</td>
<td>Contemporary Chicana/o Issues</td>
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<td>Indigenous Women, Children, and Tribes</td>
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Select one course from the following:

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<td>American Women's History Since 1800</td>
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<td>Psychology of Women</td>
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<td>SPCM 335</td>
<td>Gender and Communication</td>
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**Electives**

Total Credits 15

### Semester 6

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<td>CO 301B</td>
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<td>CO 301C</td>
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<td>CO 301D</td>
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Select one course from the following:

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<td>Gender in World Literature</td>
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<td>E 332</td>
<td>Modern Women Writers</td>
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<td>Gay and Lesbian Literature</td>
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**Electives**

Total Credits 9

### Senior

**Semester 7**

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Select two courses from the following:

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<tr>
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<td>ANTH 319</td>
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<td>ETST 320</td>
<td>Ethnicity and Film: Asian-American Experience</td>
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</table>
Minor in Ethnic Studies

The Ethnic Studies minor offers courses on the experiences of the various racial and ethnic groups in the U.S. and abroad. Courses provide a foundation for understanding the histories and contemporary issues from a comparative framework. Drawing knowledge from multidisciplinary sources, the program of study welcomes students from the humanities, the social sciences, and professional degree programs such as education, business, and law.

Requirements

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students in the Ethnic Studies minor must earn a minimum grade of C (2.000) for all Ethnic Studies courses required for the minor.

<table>
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<td>ETST 100</td>
<td>Introduction to Ethnic Studies (GT-SS3)</td>
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<td>ETST 404</td>
<td>Race Formation in the United States</td>
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<tr>
<td>or ETST 405</td>
<td>Ethnicity, Class, and Gender in the U.S.</td>
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<tr>
<td>Select one African American course from the following:</td>
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<td>ETST 250/ HIST 250</td>
<td>African American History (GT-HI1)</td>
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<td>ETST 310</td>
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<td>African American Resistance and Self-Creation</td>
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<td>ETST 354</td>
<td>Black Cinema and Media</td>
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<td>ETST 410</td>
<td>African American Periods and Personalities</td>
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ETST 405 Ethnicity, Class, and Gender in the U.S. 3
ETST 493 Ethnic Studies Research Methods and Writing 3
WS 472 Seminar in Women’s Studies-Social Sciences 3
Electives 6

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 15

Program Total Credits: 120
ETST 352/SOWK 352 Indigenous Women, Children, and Tribes
ETST 414/ANTH 414 Development in Indian Country
ETST 425 Indigenous Film and Video
ETST 444/SOC 444 Federal Indian Law and Policy

Select one Global Ethnic Studies course from the following: 3

ANTH 319 Latin American Peasantries
ETST 201 Introduction to Queer Studies
ETST 205 Ethnicity and the Media (GT-SS3)
ETST 256 Border Crossings: People/Politics/Culture (GT-SS3)
ETST 300 Queer Studies and Women of Color
ETST 365 Global Environmental Justice Movements
ETST 370 Caribbean Identities
ETST 371 The Modern Caribbean
ETST 413 Queer Creative Expressions

Total Credits 21

1 Seniors may select with minor advisor approval: ETST 531, ETST 535.
2 Seniors may select with minor advisor approval: ETST 541, ETST 550.
3 Seniors may select with minor advisor approval from ETST 500-level course(s) with a global ethnic studies content.

Master of Arts in Ethnic Studies, Plan A

Requirements

Effective Fall 2016

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<th>Code</th>
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<tr>
<td>ETST 501</td>
<td>Ethnic Studies History and Theory</td>
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<td>ETST 502</td>
<td>Research Methods</td>
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<tr>
<td>ETST 503</td>
<td>Contemporary Ethnic Studies Issues</td>
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<tr>
<td>ETST 510</td>
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<td>ETST 520</td>
<td>Race and U.S. Social Movements</td>
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<td>ETST 531</td>
<td>Latina/o Politics in the U.S.</td>
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<td>Chicana Feminism: Theory and Form</td>
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<td>ETST 540</td>
<td>Race in Latin America</td>
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<td>ETST 541</td>
<td>Gender, Violence and Indigenous Peoples</td>
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<td>ETST 544/POLS 544</td>
<td>National Identities and Nation Building</td>
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<td>ETST 545</td>
<td>Immigration and Citizenship in U.S. History</td>
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<td>ETST 550</td>
<td>Indigenous Law, Policy, and Peoples</td>
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<td>ETST 555</td>
<td>African American Intellectual Thought</td>
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<td>ETST 560</td>
<td>Race, Ethnicity, and Higher Education</td>
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<tr>
<td>ETST 573</td>
<td>Critical Disability Studies</td>
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<td>WS 510</td>
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Additional Credits 1

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<tr>
<td>WS 692</td>
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Total Credits 30

A minimum of 30 credits are required to complete this program.

1 Select enough additional credits to bring the program total to a minimum of 30 credits.

The following are specific requirements for the Ethnic Studies Master of Arts, Plan A:

- Minimum of 24 semester credits earned in residence at CSU, 21 credits must be earned after admission to the Graduate School.
- At least 21 credits must be 500-level courses or higher and at least 12 credits must be in regular courses.
- Additional elective courses include any ETST or other subject code graduate level course.

Master of Arts in Ethnic Studies, Plan B

Requirements

Effective Fall 2016

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Additional Credits 1

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<tr>
<td>WS 692</td>
<td>Seminar in Women’s Studies</td>
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</table>
A minimum of 32 credits are required to complete this program.

Select enough additional credits to bring the program total to a minimum of 32 credits.

The following are specific requirements for the Ethnic Studies Master of Arts, Plan B:

- Minimum of 24 semester credits earned in residence at CSU, 21 credits must be earned after admission to the Graduate School.
- At least 21 credits must be 500-level or higher courses and at least 12 credits must be in regular courses.
- Additional elective courses include any ETST or other subject code graduate level course.
- Successful completion of a specialized research/professional paper.
- Community presentation of professional paper/project.

Where will your multilingualism take you?

image: CSU faculty-led study abroad program at the Camino de Santiago, Spain. Photo credit: Professor Jonathan Carlyon.

Undergraduate Majors

- Major in Languages, Literatures, and Cultures
  - French Concentration
  - German Concentration
  - Spanish Concentration
  - Teaching Endorsement

Minor Programs

A minor in a foreign language offers opportunities for studying the language and culture of another country and complements many major fields. A student with a broadly based education, including a foreign language, will be better prepared to deal with changing technological, economic, and social conditions on an international scale. A student who minors in a foreign language may expect to develop sufficient competency to speak and write with reasonable accuracy and fluency while pursuing interest in language, literature, and culture. See the department for specific information on upper-division transfer work in the language of the minor.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LITA, LJPN, LLAT, LRUS, LSGN, or LSPA subject code.

Minors

- Minor in Chinese
- Minor in French
- Minor in German
- Minor in Japanese
- Minor in Spanish

Interdisciplinary Minors

- Arabic Studies
- Italian Studies
- Russian Studies

Graduate

Graduate Programs in Foreign Languages and Literatures

Students wishing to pursue advanced studies can earn a Master of Arts degree in Languages, Literatures and Cultures (with specializations in French, German, or Spanish), or follow a program that combines the specializations in French, German, or Spanish with study in another field. Students can also pursue a double degree (Joint Program) in which students earn an M.A. in Languages, Literatures and Cultures...
(specialization in French, German, or Spanish) and an M.A. in English (specialization of teaching English as a second language or teaching English as a foreign language, TEFL/TESL). Please consult the Graduate and Professional Bulletin.

Certificates
- French Linguistics and Literary Studies
- Spanish Linguistics and Literary Studies

Master Programs
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan A, French Specialization, Interdisciplinary Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan B, French Specialization, Interdisciplinary Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan A, French Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan B, French Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan A, German Specialization, Interdisciplinary Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan B, German Specialization, Interdisciplinary Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan A, German Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan B, German Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan A, Spanish Specialization, Interdisciplinary Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan B, Spanish Specialization, Interdisciplinary Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan A, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option
- Master of Arts in Foreign Languages, Literatures, and Cultures, Plan B, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option

Courses
Subjects in this department include: Arabic (LARA), Chinese (LCHI), French (LFRE), Foreign Languages and Literatures (LGEN), German (LGER), Italian (LITA), Japanese (LJPN), Latin (LLAT), Russian (LRUS), American Sign Language (LSGN), and Spanish (LSPA)

Arabic (LARA)

LARA 105 First-Year Arabic I Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Arabic.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 107 First-Year Arabic II Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LARA 105.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 200 Second-Year Arabic I (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 107.
Registration Information: Placement exam can substitute for LARA 107.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 201 Second-Year Arabic II (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 200.
Registration Information: Placement exam can substitute for LARA 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 250 Arabic Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the Arabic language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LARA 296 Group Study-Arabic Credits: Var[1-5] (0-0-0)
Course Description: Group study in Arabic language/literature/culture.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LARA 300 Third Year Arabic Credits: 3 (3-0-0)
Course Description: Develop reading and writing skills.
Prerequisite: LARA 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 301 Oral Communication - Arabic Credits: 3 (3-0-0)
Course Description: In-depth study of Arabic to improve proficiency, emphasizing oral communication.
Prerequisite: LARA 201.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LARA 495  Independent Study-Arabic  Credits: Var[1-6] (0-0-0)
Course Description:  
Prerequisite: None.  
Registration Information: Three years of college-level Arabic.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Chinese (LCHI)

LCHI 105  First-Year Chinese I  Credits: 5 (5-0-0)
Course Description: Essentials of Chinese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.  
Registration Information: No previous study in Chinese.
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 107  First-Year Chinese II  Credits: 5 (5-0-0)
Course Description: Essentials of the Chinese language for the continuing student; aural comprehension, speaking, reading, writing.
Prerequisite: LCHI 105.  
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 200  Second-Year Chinese I (GT-AH4)  Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 107.  
Registration Information: Placement exam can substitute for LCHI 107.
Term Offered: Fall.  
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 201  Second-Year Chinese II (GT-AH4)  Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 200.  
Registration Information: Placement exam can substitute for LCHI 200.
Term Offered: Spring.  
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 250  Chinese Language, Literature, Culture in Translation (GT-AH2)  Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Chinese literature and culture.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LCHI 296  Group Study-Chinese  Credits: Var[1-5] (0-0-0)
Course Description: Group study in Chinese language/literature/culture.
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LCHI 304  Third-Year Chinese I  Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 201.
Registration Information: Placement exam can substitute for LCHI 201.
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 305  Third-Year Chinese II  Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 304.
Registration Information: Placement exam can substitute for LCHI 304.
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 309  Contemporary Chinese Literature and the Arts  Credits: 3 (3-0-0)
Course Description: Trends resulting from traditional Chinese and contemporary foreign influences in Chinese literature and the arts.
Prerequisite: None.
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 365  Introduction to Chinese Cinema Studies  Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Chinese cinema. Taught in Chinese.
Prerequisite: LCHI 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LCHI 408  Chinese Calligraphy  Credit: 1 (1-0-0)
Course Description: History of Chinese calligraphy and basic Chinese calligraphy skills.
Prerequisite: LCHI 304.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
LFRE 100 First-Year French I Credits: 5 (3-0-2)
Course Description: Essentials of French for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in French. Credit allowed for only one of the following: LFRE 100, LFRE 105, or LFRE 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 101 First-Year French II Credits: 5 (3-0-2)
Course Description: Essentials of French for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LFRE 100 or LFRE 105 or LFRE 106.
Registration Information: Must register for lecture and recitation. Placement exam or instructor placement can substitute for course prerequisites. Credit not allowed for both LFRE 101 and LFRE 107. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 106 First-Year French Review Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in French. Basic review of essential skills: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement required. Credit allowed for only one of the following: LFRE 100, LFRE 105, or LFRE 106.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 108 Intensive French I Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LFRE 105 with a minimum grade of A or LFRE 106 with a minimum grade of A.
Registration Information: Written consent from instructor or placement exam can substitute for course prerequisites.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 120 Reading for Proficiency-French Credits: 3 (3-0-0)
Course Description: Essentials of the French language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LFRE 120 not allowed if LFRE 101, LFRE 107, or LFRE 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 200 Second-Year French I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 107 or LFRE 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 201 Second-Year French II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 200.
Registration Information: Placement exam can substitute for LFRE 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 208 Intensive French II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LFRE 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 250 French Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the French language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LFRE 296 Group Study-French Credits: Var[1-5] (0-0-0)
Course Description: Instructor Option.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
LFRE 300 Reading and Writing for Communication-French Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary French writing.
Prerequisite: LFRE 201 or LFRE 208.
Registration Information: Placement exam can substitute for course prerequisites. Credit not allowed for both LFRE 300 and LFRE 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 301 Oral Communication-French Credits: 3 (3-0-0)
Course Description: In-depth French language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LFRE 201.
Registration Information: Placement exam can substitute for LFRE 201. Credit not allowed for both LFRE 301 and LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 310 Approaches to French Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in French prose, drama, and poetry.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 312 Introduction to French Linguistics Credits: 3 (3-0-0)
Course Description: French linguistics, phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LFRE 300, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 313 Introduction to French Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 326 French Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LFRE 300, may be taken concurrently.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 335 Issues in French/ Francophone Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of French-speaking countries.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 345 Business French Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the French language and culture.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 355 20th Century French Literature Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LFRE 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 365 Introduction to French Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to French and Francophone cinema. Taught in French.
Prerequisite: LFRE 310 or LFRE 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 400 Advanced French Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LFRE 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 413 Advanced French Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433A Advanced French/ Francophone Culture: Representations Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433B Advanced French/ Francophone Culture: Center and Margins Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 441 Advanced Business French Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the French language and culture.
Prerequisite: LFRE 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Registration Information</th>
<th>Special Course Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 450</td>
<td>Selected French Literary Movements and Periods</td>
<td>3 (3-0-0)</td>
<td>Studies in selected literary movements and periods of France such as classicism, realism, naturalism, existentialism.</td>
<td>(LFRE 300) and (LFRE 310).</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 452</td>
<td>Genre Studies in French</td>
<td>3 (3-0-0)</td>
<td>Development of critical approaches to major works in literature through selected literary genres and subgenres.</td>
<td>(LFRE 300) and (LFRE 310).</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 453</td>
<td>Author Studies in French</td>
<td>3 (3-0-0)</td>
<td>Development of critical approaches to authors through the appreciation and analysis of selected works.</td>
<td>(LFRE 300) and (LFRE 310).</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 454</td>
<td>Topic Studies in French</td>
<td>3 (3-0-0)</td>
<td>Selected topic studies such as themes, topoi, and interdisciplinary subjects in literature.</td>
<td>(LFRE 300) and (LFRE 310).</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 455</td>
<td>Independent Study-French</td>
<td>Var[1-6]</td>
<td>Current theory and practice in second-language instruction; technological applications.</td>
<td>None</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 460</td>
<td>French/ Francophone Women Writers</td>
<td>3 (3-0-0)</td>
<td>Selected French and Francophone women writers in a variety of genres emphasizing relationships among gender, culture, and writing.</td>
<td>None</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 470</td>
<td>French Grammatical Constructions</td>
<td>3 (3-0-0)</td>
<td>Linguistic analysis of selected French grammatical constructions (word order, word formation and sentence structure), their relationship to meaning.</td>
<td>LFRE 312</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 471</td>
<td>Seminar-French Language, Literature, and Society</td>
<td>3 (0-0-3)</td>
<td>Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.</td>
<td>(LFRE 310) and (LFRE 400% to 479% - at least 2 courses).</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 492</td>
<td>Language Analysis/Stylistics-French</td>
<td>3 (3-0-0)</td>
<td>Acquisition, discourse analysis, and language change and variation over time and space.</td>
<td>LFRE 500</td>
<td>None</td>
<td>No</td>
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<tr>
<td>LFRE 500</td>
<td>History of the French Language</td>
<td>3 (3-0-0)</td>
<td>Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the language.</td>
<td>LFRE 400</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 514</td>
<td>Issues in Teaching French</td>
<td>1 (1-0-0)</td>
<td>Current theory and practice in second-language instruction; technological applications.</td>
<td>None</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 525</td>
<td>Intensive French-Graduate Review</td>
<td>4 (3-3-0)</td>
<td>Immersion review of French for the teacher, developing intermediate-level proficiency in culture and the four skills.</td>
<td>None</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 536</td>
<td>Topics in French Linguistics</td>
<td>3 (3-0-0)</td>
<td>Acquisition, discourse analysis, and language change and variation over time and space.</td>
<td>LFRE 500</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>LFRE 551</td>
<td>Selected French Literary Movements/Periods</td>
<td>3 (3-0-0)</td>
<td>Advanced studies in and critical approaches to selected literary movements or periods.</td>
<td>None</td>
<td>None</td>
<td>No</td>
</tr>
</tbody>
</table>
Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. Prerequisite: None. Registration Information: Offered as an online course only. Term Offered: Summer. Grade Mode: S/U Sat/Unsat Only. Special Course Fee: No.

LFRE 215 Second-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. Prerequisite: None. Registration Information: Offered as an online course only. Term Offered: Summer. Grade Mode: S/U Sat/Unsat Only. Special Course Fee: No.

LFRE 290 Theatre Workshop in a Foreign Language Credits: Var[1-3] (0-0-0)
Course Description: Application of communication skills in a foreign language through informal staging of dramatic scripts. Prerequisite: LARA 105 or LCHI 105 or LFRE 105 or LGER 105 or LITA 105 or LJPN 105 or LKOR 105 or LRUS 105 or LSPA 105. Terms Offered: Fall, Spring. Grade Mode: Traditional. Special Course Fee: No.

LFRE 295 Independent Study-French Credits: Var[1-3] (0-0-0)
Course Description: Treatment of selected topics in seminar. Prerequisite: None. Restriction: Must be a: Graduate, Professional. Registration Information: Undergraduate degree in French. Terms Offered: Fall, Spring. Grade Mode: Instructor Option. Special Course Fee: No.

LFRE 315 Third-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. Prerequisite: None. Registration Information: Offered as an online course only. Term Offered: Summer. Grade Mode: S/U Sat/Unsat Only. Special Course Fee: No.

LFRE 315 Third-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. Prerequisite: None. Registration Information: Offered as an online course only. Term Offered: Summer. Grade Mode: S/U Sat/Unsat Only. Special Course Fee: No.

LFRE 315 Third-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. Prerequisite: None. Registration Information: Offered as an online course only. Term Offered: Summer. Grade Mode: S/U Sat/Unsat Only. Special Course Fee: No.

Department of Languages, Literatures and Cultures

Foreign Languages and Literatures (LGEN)

LGEN 114 First-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. Prerequisite: None. Registration Information: Offered as an online course only. Term Offered: Summer. Grade Mode: S/U Sat/Unsat Only. Special Course Fee: No.

LGEN 115 First-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. Prerequisite: None. Registration Information: Offered as an online course only. Term Offered: Summer. Grade Mode: S/U Sat/Unsat Only. Special Course Fee: No.
LGEN 365 Introduction to Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to foreign cinema. Taught in English.
Prerequisite: LCHI 305 or LFRE 310 or LFRE 335 or LGER 310 or LGER 335 or LJPN 305 or LRUS 305 or LSPA 310 or LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 382 Italian Ethnic Identity, Culture, and Gender Credits: 3 (2-0-1)
Also Offered As: ETST 382.
Course Description: Must register for lecture and recitation.
Prerequisite: None.
Registration Information: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 414 Fourth-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 415 Fourth-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 465A Studies in Foreign Film: The Americas Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465B Studies in Foreign Film: Asia Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465C Studies in Foreign Film: Europe Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 465D Studies in Foreign Film: Africa Credits: 3 (3-0-0)
Course Description: Representation of foreign societies through film, taught in English.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Advisor-approved position at a professional off-campus training program with international connections.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 492 Language, Literature, and Society-General Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature and society.
Prerequisite: (LFRE 310 or LGER 310 or LSPA 310) and (LFRE 400 to 481 - at least 2 courses or LGER 400 to 481 - at least 2 courses or LSPA 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 505 Methods/Technologies in Language Instruction Credits: 2 (2-1-0)
Course Description: Theory and methodology of teaching foreign languages and cultures, including video and computer-assisted technology.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 510 Research Methods Credit: 1 (1-0-0)
Course Description: Resources and reference tools appropriate to research in foreign languages and literatures.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 516 Theory/Methods-Foreign Language Instruction Credits: 3 (3-0-0)
Course Description: Foreign language teaching methodology.
Prerequisite: None.
Registration Information: Admission to graduate studies in foreign language.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 530 Literary and Cultural Theory Credits: 3 (3-0-0)
Course Description: Theoretical approaches to contemporary literary and cultural criticism.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
LG 535 Graduate Studies in Civilization Credits: 3 (3-0-0)
Course Description: Critical and analytical approaches to a foreign civilization and culture. Research related to language of specialization.
Prerequisite: LFR 433A or LFR 433B or LG 434 or LSPA 436 or LSPA 437.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG 545 Literary Translation Theory and Practice Credits: Var[1-3] (0-0-0)
Course Description: Theory and practice of translating literary texts from foreign language to comparable English.
Prerequisite: None.

Registration Information: Reading knowledge of a foreign language required.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LG 694 Independent Study: Portfolio Credits: Var[1-6] (0-0-0)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LG 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

German (LGER)
LGER 100 First-Year German I Credits: 5 (3-0-2)
Course Description: Essentials of German for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in German. Credit not allowed for both LGER 100 and LGER 105. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 101 First-Year German II Credits: 5 (3-0-2)
Course Description: Essentials of German for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LGER 100 or LGER 105.
Registration Information: Must register for lecture and recitation. Placement exam can substitute for LGER 100. Credit not allowed for both LGER 101 and LGER 107. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 105 Intensive German I Credits: 5 (5-0-0)
Course Description: Essentials of German for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: LGER 105 with a minimum grade of A.
Registration Information: Written consent of instructor or placement exam can substitute for LGER 105 prerequisite.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 108 Intensive German I Credits: 5 (5-0-0)
Course Description: Essentials of German for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: LGER 108.
Registration Information: Credit for LGER 108 not allowed if LGER 100, LGER 107, or LGER 108 has been completed.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 120 Reading for Proficiency-German Credits: 3 (3-0-0)
Course Description: Essentials of the German language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LGER 120 not allowed if LGER 101, LGER 107, or LGER 108 has been completed.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 200 Second-Year German I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in German conversation, reading, and writing.
Prerequisite: LGER 107 or LGER 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LGER 201 Second-Year German II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LGER 200.
Registration Information: Placement exam can substitute for LGER 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LGER 208 Intensive German II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LGER 108.
Registration Information: Placement exam can substitute for LGER 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LGER 250  German Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the German language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 296  Group Study-German Credits: Var[1-5] (0-0-0)
Course Description: Group study in German language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 300  Reading and Writing for Communication-German Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LGER 201 or LGER 208.
Registration Information: Placement exam can substitute for course prerequisites.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 310  Approaches to German Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 313  Introduction to German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from German.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 326  German Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LGER 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 335  Issues in German Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of German-speaking countries.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 336  Issues in Swiss and Austrian Culture Credits: 3 (3-0-0)
Course Description: Swiss and Austrian culture focusing on the development of their respective cultures from the medieval to the modern periods. Taught in German.
Prerequisite: LGER 300.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 345  Business German Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the German language and culture.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 355  20th Century German Literature Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LGER 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 365  Introduction to German Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to German cinema. Taught in German.
Prerequisite: LGER 310 or LGER 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 400  Advanced German Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LGER 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 401  Advanced German Oral Communication Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in German language skills, with an emphasis on oral communication.
Prerequisite: LGER 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LGER 413  Advanced German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the German.
Prerequisite: LGER 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LGER 434 Advanced German Culture Credits: 3 (3-0-0)
Course Description: Critical examination of selected topics in culture and cultural history of German-speaking countries.
Prerequisite: LGER 335 or LGER 336.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 441 Advanced Business German Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the German language and culture.
Prerequisite: LGER 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 450 Selected German Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Germany, such as classicism, realism, naturalism, existentialism.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 452 Genre Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 453 Author Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 454 Topic Studies in German Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topics, and interdisciplinary subjects in literature.
Prerequisite: LGER 300 and LGER 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 465 Advanced Studies in German Film Credits: 3 (3-0-0)
Course Description: Representation of German society and culture through film. Taught in German.
Prerequisite: LGER 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 492 Seminar-German Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.
Prerequisite: (LGER 310) and (LGER 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 495 Independent Study-German Credits: Var[1-6] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGER 500 Language Analysis/Stylistics-German Credits: 3 (3-0-0)
Course Description: Analysis of German structure through the examination of style in literary and non-literary texts.
Prerequisite: LGER 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 508 Intensive German-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of German for the teacher, developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 514 Issues in Teaching German Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGER 525 History of the German Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of German.
Prerequisite: LGER 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGER 551 Selected German Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
**LGER 552** Advanced Studies in German Literary Genres  Credits: 3 (3-0-0)
*Course Description:* Advanced studies and critical approaches to literary genres through study of major works in foreign literatures.
*Prerequisite:* None.
*Registration Information:* Undergraduate degree in German.
*Term Offered:* Fall.
*Grade Mode:* Traditional.
*Special Course Fee:* No.

**LGER 553** Advanced German Author Studies  Credits: 3 (3-0-0)
*Course Description:* Critical approaches to the study of selected authors through appreciation and analysis of their major works.
*Prerequisite:* None.
*Registration Information:* Undergraduate degree in German.
*Term Offered:* Spring (even years).
*Grade Mode:* Traditional.
*Special Course Fee:* No.

**LGER 554** Advanced German Topic Studies  Credits: 3 (3-0-0)
*Course Description:* Selected topics (theme, topoi, and interdisciplinary subjects) in foreign literatures.
*Prerequisite:* None.
*Registration Information:* Undergraduate degree in German.
*Term Offered:* Spring.
*Grade Mode:* Traditional.
*Special Course Fee:* No.

**LGER 692** Seminar-German  Credits: 3 (0-0-3)
*Course Description:* Treatment of selected topics in seminar.
*Prerequisite:* None.
*Restriction:* Must be a Graduate, Professional.
*Registration Information:* Undergraduate degree in German.
*Terms Offered:* Fall, Spring.
*Grade Mode:* Instructor Option.
*Special Course Fee:* No.

**LGER 695** Independent Study-German  Credits: Var[1-6] (0-0-0)
*Course Description:* Treatment of selected topics in independent study.
*Prerequisite:* None.
*Restriction:* Must be a Graduate, Professional.
*Terms Offered:* Fall, Spring, Summer.
*Grade Mode:* Instructor Option.
*Special Course Fee:* No.

**Greek (LGRK)**

**LGRK 152** Classical Greek I  Credits: 3 (3-0-0)
*Course Description:* Essentials of the Greek language, reading, and translation.
*Prerequisite:* None.
*Term Offered:* Spring (even years).
*Grade Modes:* S/U within Student Option, Trad within Student Option.
*Special Course Fee:* No.

**LGRK 153** Classical Greek II  Credits: 3 (3-0-0)
*Course Description:* Essentials of the Greek language, reading, and translation.
*Prerequisite:* LGRK 152.
*Term Offered:* Spring (even years).
*Grade Modes:* S/U within Student Option, Trad within Student Option.
*Special Course Fee:* No.

**Italian (LITA)**

**LITA 105** First-Year Italian I  Credits: 5 (5-0-0)
*Course Description:* Essentials of Italian for the beginner: aural comprehension, speaking, reading, writing.
*Prerequisite:* None.
*Registration Information:* No previous study in Italian.
*Terms Offered:* Fall, Spring, Summer.
*Grade Modes:* S/U within Student Option, Trad within Student Option.
*Special Course Fee:* No.

**LITA 107** First-Year Italian II  Credits: 5 (5-0-0)
*Course Description:* Essentials of Italian for the continuing student: aural comprehension, speaking, reading, writing.
*Prerequisite:* LITA 105.
*Registration Information:* No previous study in Italian.
*Terms Offered:* Fall, Spring, Summer.
*Grade Modes:* S/U within Student Option, Trad within Student Option.
*Special Course Fee:* No.

**LITA 200** Second-Year Italian I (GT–AH4)  Credits: 3 (3-0-0)
*Course Description:* Grammar review and extensive practice in Italian conversation, reading, and writing.
*Prerequisite:* LITA 107.
*Registration Information:* Placement exam can substitute for LITA 107.
*Terms Offered:* Fall, Spring.
*Grade Mode:* Traditional.
*Special Course Fee:* No.
*Additional Information:* Arts & Humanities 3B, World Languages (GT-AH4).

**LITA 201** Second-Year Italian II (GT–AH4)  Credits: 3 (3-0-0)
*Course Description:* Grammar review and extensive practice in Italian conversation, reading, and writing.
*Prerequisite:* LITA 200.
*Registration Information:* Placement exam can substitute for LITA 200.
*Terms Offered:* Fall, Spring.
*Grade Mode:* Traditional.
*Special Course Fee:* No.
*Additional Information:* Arts & Humanities 3B, World Languages (GT-AH4).

**LITA 296** Group Study-Italian  Credits: Var[1-5] (0-0-0)
*Course Description:* Group study in language/literature/culture.
*Prerequisite:* None.
*Terms Offered:* Fall, Spring, Summer.
*Grade Mode:* Instructor Option.
*Special Course Fee:* No.

**LITA 365** Studies in Foreign Film-Italian  Credits: 3 (3-0-0)
*Course Description:* Representation of Italian society through film. Taught in Italian.
*Prerequisite:* None.
*Terms Offered:* Fall, Spring.
*Grade Mode:* Traditional.
*Special Course Fee:* No.

**LITA 495** Independent Study-Italian  Credits: Var[1-6] (0-0-0)
*Course Description:* Treatment of selected topics in independent study.
*Prerequisite:* None.
*Registration Information:* Must have completed three years of Italian at college level.
*Terms Offered:* Fall, Spring, Summer.
*Grade Mode:* Instructor Option.
*Special Course Fee:* No.
Japanese (LJPN)

LJPN 105 First-Year Japanese I Credits: 5 (5-0-0)
Course Description: Essentials of Japanese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Japanese. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 107 First-Year Japanese II Credits: 5 (5-0-0)
Course Description: Essentials of Japanese for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LJPN 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 200 Second-Year Japanese I (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in Japanese conversation, reading, and writing.
Prerequisite: LJPN 107.
Registration Information: Placement exam can substitute for LJPN 107. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 201 Second-Year Japanese II (GT-AH4) Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LJPN 200.
Registration Information: Placement exam can substitute for LJPN 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 208 Kanji Study Credit: 1 (1-0-0)
Course Description: Kanji (Chinese characters) learning strategies, through examination and analysis of Kanji characters.
Prerequisite: LJPN 105.
Registration Information: May be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 250 Japanese Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Japanese language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LJPN 296 Group Study-Japanese Credits: Var[1-5] (0-0-0)
Course Description: Group study in Japanese language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 304 Third-Year Japanese I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LJPN 201.
Registration Information: Placement exam can substitute for LJPN 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 305 Third-Year Japanese II Credits: 3 (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LJPN 304.
Registration Information: Placement exam can substitute for LJPN 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 365 Introduction to Japanese Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Japanese cinema. Taught in Japanese.
Prerequisite: LJPN 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 404 Historical Aspects of the Language and Society Credits: 3 (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities.
Prerequisite: LJPN 305.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 405 Integrated Japanese: Beyond Words Credits: 3 (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities for the continuing student.
Prerequisite: LJPN 305.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 408 Advanced Kanji Study Credit: 1 (1-0-0)
Course Description: Kanji learning strategies and acquisition of advanced Kanji characters.
Prerequisite: LJPN 201.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
**LJPN 495  Independent Study-Japanese** Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Japanese.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**LJPN 496  Group Study-Japanese** Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LJPN 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

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**Korean (LKOR)**

**LKOR 105  First-Year Korean I** Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Korean.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

**LKOR 107  First-Year Korean II** Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LKOR 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

**LKOR 202  Intermediate Korean and Culture I** Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 107.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

**LKOR 203  Intermediate Korean and Culture II** Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 202.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

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**Latin (LLAT)**

**LLAT 105  First-Year Latin I** Credits: 5 (5-0-0)
Course Description: Essentials of Latin grammar, vocabulary, and phonology.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

**LLAT 107  First-Year Latin II** Credits: 5 (5-0-0)
Course Description: Six tenses of verbs, active and passive; use subjunctive review of the five declensions of nouns and adjectives; new vocabulary.
Prerequisite: LLAT 105.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

**LLAT 296  Group Study-Latin** Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

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**Russian (LRUS)**

**LRUS 105  First-Year Russian I** Credits: 5 (5-0-0)
Course Description: Essentials of the Russian for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Russian.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

**LRUS 107  First-Year Russian II** Credits: 5 (5-0-0)
Course Description: Essentials of Russian for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LRUS 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

**LRUS 200  Second-Year Russian I (GT-AH4)** Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 107.
Registration Information: Placement exam can substitute for LRUS 107.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

**LRUS 201  Second-Year Russian II (GT-AH4)** Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 200.
Registration Information: Placement exam can substitute for LRUS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).
LRUS 250 Russian Language, Literature, Culture in Translation (GT-AH2)  Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Russian language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LRUS 296 Group Study--Russian Credits: Var[1-5] (0-0-0)
Course Description: Group study in Russian language/literature/culture.
Prerequisite: LRUS 100 to 499 between 3 and 5 credits - at least 3 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 304 Third-Year Russian I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LRUS 201.
Registration Information: Placement exam can substitute for LRUS 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 305 Third-Year Russian II Credits: 3 (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LRUS 304.
Registration Information: Placement exam can substitute for LRUS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 350 Russian Culture Credits: 3 (3-0-0)
Course Description: Russian culture and its development through literature, as well as geography, history, and music.
Prerequisite: LRUS 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 365 Introduction to Russian Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Russian cinema. Taught in Russian.
Prerequisite: LRUS 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 495 Independent Study-Russian Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Russian.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 496 Group Study-Russian Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LRUS 305.
Registration Information: Placement exam can substitute for LRUS 305.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

American Sign Language (LSGN)

LSGN 109 American Sign Language I Credits: 5 (5-0-0)
Course Description: Vocabulary, grammar and basic conversational skill in ASL, with information on deaf culture.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 110 American Sign Language II Credits: 5 (5-0-0)
Course Description: Development of communicative competence in ASL skill and expansion of knowledge of deaf culture.
Prerequisite: LSGN 109.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 200 Second-Year American Sign Language I Credits: 3 (3-0-0)
Course Description: Building intermediate-low level speed/accuracy through complex vocabulary, syntax, depicting verbs and classifiers, and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 110.
Registration Information: Field trips required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSGN 201 Second-Year American Sign Language II Credits: 3 (3-0-0)
Course Description: Building intermediate-mid level speed/accuracy through self-generated stories, analysis of ASL semantic structures and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 200.
Registration Information: Field trips required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSGN 296 Group Study-American Sign Language Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
Spanish (LSPA)

LSPA 100  First-Year Spanish I  Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in Spanish. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 101  First-Year Spanish II  Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the continuing student: aural comprehension, speaking, reading, and writing.
Prerequisite: LSPA 100 or LSPA 105 or LSPA 106.
Registration Information: Must register for lecture and recitation. Placement exam or instructor placement can substitute for course prerequisites. Credit not allowed for both LSPA 101 and LSPA 107. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 106  First-Year Spanish Review  Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in Spanish. Basic review of essential skills: aural comprehension, speaking, reading, and writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 108  Intensive Spanish I  Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LSPA 105 with a minimum grade of A or LSPA 106 with a minimum grade of A.
Registration Information: Written consent of instructor or placement exam can substitute for course prerequisites.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 120  Reading for Proficiency-Spanish  Credits: 3 (3-0-0)
Course Description: Essentials of language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LSPA 120 not allowed if LSPA 101, LSPA 107, or LSPA 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 200  Second-Year Spanish I (GT-AH4)  Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in Spanish conversation, reading, and writing.
Prerequisite: LSPA 107 or LSPA 108.
Registration Information: Placement exam can substitute for course prerequisites.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 201  Second-Year Spanish II (GT-AH4)  Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LSPA 200.
Registration Information: Placement exam can substitute for LSPA 201. Credit not allowed for both LSPA 201 and LSPA 228B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 208  Intensive Spanish II  Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LSPA 108.
Registration Information: Placement exam can substitute for LSPA 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 230  Spanish for Heritage Speakers  Credits: 3 (3-0-0)
Course Description: Expands vocabulary, oral communication, writing and reading skills, as well as the contents and contexts of communication in Spanish.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 250  Spanish Language, Literature, Culture in Translation (GT-AH2)  Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Spanish literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 296  Group Study-Spanish  Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
LSPA 300  Reading and Writing for Communication-Spanish  Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LSPA 201 or LSPA 230.
Registration Information: Placement exam can substitute for LSPA 201.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 301  Oral Communication-Spanish  Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.
Registration Information: Placement exam can substitute for LSPA 201.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 310  Approaches to Spanish Literature  Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LSPA 300.
Registration Information: Placement exam can substitute for LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 312  Introduction to Spanish Linguistics  Credits: 3 (3-0-0)
Course Description: Phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LSPA 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 313  Introduction to Spanish Translation and Interpreting  Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 326  Spanish Phonetics  Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to Spanish sound system; intensive practice in pronunciation, intonation.
Prerequisite: LSPA 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 335  Issues in Hispanic Culture  Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of Spanish-speaking countries.
Prerequisite: LSPA 300
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 335  Business Spanish  Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 345  Caribbean Culture in Hispanic Literature  Credits: 3 (3-0-0)
Course Description: Specific linguistic and cultural issues necessary to function in the Hispanic health care world.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 365  Introduction to Spanish Cinema  Credits: 3 (3-0-0)
Course Description: Representation of Spanish society through film.
Taught in Spanish.
Prerequisite: LSPA 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 379  Service Learning-Spanish  Credits: 1 (0-2-0)
Course Description: Language-related voluntary community work.
Prerequisite: None.
Registration Information: Concurrent registration with 300-level Spanish course. Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LSPA 400  Advanced Spanish Communication Skills  Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 401  Advanced Spanish Oral Communication  Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in Spanish language skills, with an emphasis on oral communication.
Prerequisite: LSPA 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 413  Advanced Spanish Translation and Interpreting  Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 435  Caribbean Culture in Hispanic Literature  Credits: 3 (3-0-0)
Course Description: Hispanic-Caribbean cultures with emphasis on African heritage and cultural identity.
Prerequisite: LSPA 335.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 436 Advanced Latin American Culture Credits: 3 (3-0-0)
Course Description: Latin American cultural identities and their history.
Prerequisite: LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 437 Advanced Spanish Culture Credits: 3 (3-0-0)
Course Description: Cultural characteristics of Spanish society through the ages.
Prerequisite: LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 441 Advanced Business Spanish Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 442 Colonial Latin American Literature Credits: 3 (3-0-0)
Course Description: Literature and literary culture of colonial Latin America. Readings and essays are in Spanish.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 443 Spanish Theatre Credits: 3 (3-0-0)
Course Description: Major authors and works of Spanish theatre.
Prerequisite: (LSPA 300) and (LSPA 310).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 444 Women Writers in the Hispanic World Credits: 3 (3-0-0)
Course Description: Selected Hispanic women writers in a variety of genres emphasizing relationships among gender, culture, and writing.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 445 Spanish-American Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spanish America such as classicism, realism, naturalism, existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 450 Selected Spanish Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spain, such as classicism, realism, naturalism, existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 452 Genre Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 453 Author Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 454 Topic Studies in Spanish Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topoi, and interdisciplinary studies in literature.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 455A Studies in Foreign Film: Spain Credits: 3 (3-0-0)
Course Description: Representation of Spanish society or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 455B Studies in Foreign Film: Latin America Credits: 3 (3-0-0)
Course Description: Representation of Latin American societies or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 456 Spanish Vocabulary and Word Formation Credits: 3 (3-0-0)
Course Description: Spanish vocabulary: meaning relations, word formation through prefixation, suffixation, and composition, and meaning change over time and space.
Prerequisite: LSPA 312.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 470 Spanish Grammatical Constructions Credits: 3 (3-0-0)
Course Description: Linguistic analysis of selected Spanish grammatical constructions (word order, word formation, and sentence structure), their relationship to meaning.
Prerequisite: LSPA 400.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 479 Service Learning-Spanish Credit: 1 (0-2-0)
Course Description: Language-related voluntary community work.
Prerequisite: None.
Registration Information: Concurrent registration with 400-level Spanish course. Written consent of the instructor of the 400-level Spanish course required. May be taken up to 3 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LSPA 492 Seminar-Spanish Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society.
Prerequisite: (LSPA 310) and (LSPA 400 to 479 - at least 2 courses).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 495 Independent Study-Spanish Credits: Var[1-6] (0-0-0)
Course Description: None.
Registration Information: Three years of college-level Spanish.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 500 Language Analysis/Stylistics-Spanish Credits: 3 (3-0-0)
Course Description: Analysis of Spanish structure through the examination of style in literary and non-literary texts.
Prerequisite: LSPA 400.
Term Offered: Fall.
Grade Modes: (S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 508 Intensive Spanish-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of Spanish for the teacher; developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 514 Issues in Teaching Spanish Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 525 History of the Spanish Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the Spanish language.
Prerequisite: LSPA 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 526 Topics in Spanish Linguistics Credits: 3 (3-0-0)
Course Description: Acquisition, discourse analysis, and language change and variation over time and space.
Prerequisite: LSPA 500.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 549 Literary Periods of Spanish America Credits: 3 (3-0-0)
Course Description: Advanced studies in critical approaches to selected literary movements or periods of Spanish America.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 551 Selected Spanish Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 552 Advanced Studies in Spanish Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 553 Advanced Spanish Author Studies Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 554 Advanced Topic Studies-Spanish Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in Spanish literature.
Prerequisite: None.
Registration Information: Undergraduate degree in Spanish.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 692 Seminar-Spanish Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Undergraduate degree in Spanish.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Languages, Literatures, and Cultures

Language majors accomplish:

- Real and measurable functional competencies in the target language
- A practical command of grammar and pronunciation approaching that of a native speaker
- Comprehension in reading and listening
- Ability in speaking and writing in a manner acceptable to an educated native
- A practical command of the culturally defined aspects of the language and related cultural patterns of behavior, including non-verbal communication
- In advanced-level study, a comfortable familiarity with most of the language- and culture-specific characteristics of its literature

The department strongly encourages education or other experiences abroad and has exchange agreements in place with universities in several countries. Students should visit the department prior to studying abroad for clarification on course transfers. Information is available through Education Abroad (http://educationabroad.colostate.edu).

Minors are offered in Chinese, French, German, Japanese, and Spanish, as well as interdisciplinary minors in Arabic, Italian and Russian Studies.

Basic courses may also be taken in Latin and American Sign Language.

Learning Outcomes

Students will demonstrate:

- Communicative oral skills in the target language, including grammatical accuracy, correct use of tense, fluency, appropriate intonation, suitable vocabulary and discourse devices for expressing opinions or when giving research presentations.
- Communicative writing skills in the target language, including clarity of ideas, grammatical accuracy and appropriate vocabulary, adequate elaboration of ideas through a variety of sentence structures and vocabulary, and logical flow of ideas through the use of discourse organizational devices.
- Analytical skill in literary and cultural texts of the target language, including ability to formulate and present a topic of inquiry, to critically analyze the topic with valid supporting evidence, and to cogently synthesize and summarize the ideas in bibliographical sources and the results of their own analytical inquiry.
- Increased sensitivity to and appreciation of cultural and linguistic differences.

Potential Occupations

Available career choices include, but are not limited to: bilingual educator, foreign language teacher, translation/interpretation, linguistics, civil service, foreign service and diplomacy, medical fields, social services, immigration/naturalization, journalism/ broadcasting, customs, banking, import/exports, sales/customer service, publishing, international business, international nonprofit organizations, government/military intelligence, global tourism.

Concentrations

- French Concentration
- German Concentration
- Spanish Concentration
- Teaching Endorsement

Major in Languages, Literatures, and Cultures, French Concentration

Requirements

Effective Fall 2015

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

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Total Credits 30

Sophomore

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Second-Year French I (GT-AH4)
Major in Languages, Literatures, and Cultures, French Concentration

**Second-Year French II (GT-AH4)**

- LFRE 201
- Advanced Writing
- Arts and Humanities
- Global and Cultural Awareness
- Mathematics
- Biological and Physical Sciences
- Elective

**Junior**

- LFRE 300: Reading and Writing for Communication-French
- Select three of the following French elective courses:
  - LFRE 301: Oral Communication-French
  - LFRE 312: Introduction to French Linguistics
  - LFRE 313: Introduction to French Translation and Interpreting
  - LFRE 326: French Phonetics
  - LFRE 345: Business French
  - LFRE 355: 20th Century French Literature
  - LFRE 365: Introduction to French Cinema Studies
  - LFRE 413: Advanced French Translation and Interpreting
  - LFRE 433A²: Advanced French/Francophone Culture: Representations
  - LFRE 433B²: Advanced French/Francophone Culture: Center and Margins
  - LFRE 441: Advanced Business French
  - LFRE 450: Selected French Literary Movements and Periods
  - LFRE 452: Genre Studies in French
  - LFRE 453: Author Studies in French
  - LFRE 454: Topic Studies in French
  - LFRE 460: French/ Francophone Women Writers
  - LFRE 470: French Grammatical Constructions
  - LFRE 310: Approaches to French Literature
  - LFRE 335: Issues in French/ Francophone Culture
- Electives

**Senior**

- LFRE 400: Advanced French Communication Skills
- Select one from the following:
  - LFRE 433A²: Advanced French/ Francophone Culture: Representations
  - LFRE 433B²: Advanced French/ Francophone Culture: Center and Margins
- Select one French Elective course from the following not taken elsewhere:
  - LFRE 413: Advanced French Translation and Interpreting
  - LFRE 433A²: Advanced French/ Francophone Culture: Representations
  - LFRE 433B²: Advanced French/ Francophone Culture: Center and Margins
  - LFRE 441: Advanced Business French
  - LFRE 450: Selected French Literary Movements and Periods
  - LFRE 452: Genre Studies in French
  - LFRE 453: Author Studies in French
  - LFRE 454: Topic Studies in French
  - LFRE 460: French/ Francophone Women Writers
  - LFRE 470: French Grammatical Constructions
  - LFRE 492³: Seminar-French Language, Literature, and Society
- Select one literature course from the following not taken elsewhere:

**Total Credits**

- Junior: 28
- Senior: 30
- Total: 58

1. Arts and Humanities may include French or French-related courses.
2. Advanced French/ Francophone Culture: Representations and Center and Margins may be repeated.
3. Seminar-French Language, Literature, and Society is a required course for senior students.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 450</td>
<td>Selected French Literary Movements and Periods</td>
<td></td>
</tr>
<tr>
<td>LFRE 452</td>
<td>Genre Studies in French</td>
<td></td>
</tr>
<tr>
<td>LFRE 453</td>
<td>Author Studies in French</td>
<td></td>
</tr>
<tr>
<td>LFRE 454</td>
<td>Topic Studies in French</td>
<td></td>
</tr>
<tr>
<td>LFRE 460</td>
<td>French/ Francophone Women Writers</td>
<td></td>
</tr>
<tr>
<td>LFRE 492</td>
<td>Seminar-French Language, Literature, and Society</td>
<td>3</td>
</tr>
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</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 492</td>
<td>Seminar-French Language, Literature, and Society</td>
<td></td>
</tr>
<tr>
<td>LGEN 492</td>
<td>Language, Literature, and Society-General</td>
<td>4B,4C</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 492</td>
<td>Seminar-French Language, Literature, and Society</td>
<td></td>
</tr>
<tr>
<td>LGEN 492</td>
<td>Language, Literature, and Society-General</td>
<td>4B,4C</td>
</tr>
</tbody>
</table>

Electives

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<table>
<thead>
<tr>
<th></th>
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<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Program Total Credits:</td>
<td>120</td>
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</table>

1. Select from the list of courses in category 3B of the All-University Core Curriculum (AUCC). The 200-level French courses may not be used here.

2. Students must take either LFRE 433A or LFRE 433B in the senior year to satisfy AUCC category 4A. Whichever course is not taken there may be taken either in the junior year as part of the three-course French elective selection or in the senior year as a French elective.

3. LFRE 492 may be taken for up to six credits.

4. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 9 elective credits must be upper-division.

### Major Completion Map

**Distinctive Requirements for Degree Program:**
All majors and minors in the department must earn a minimum grade of C (a grade of C# is not acceptable) in each upper# division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HIST 101</td>
<td>Western Civilization, Modern (GT-HI1)</td>
<td>3D</td>
<td></td>
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</tr>
<tr>
<td>HIST 171</td>
<td>World History, 1500-Present (GT-HI1)</td>
<td>3D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LFRE 100</td>
<td>First-Year French I</td>
<td>X</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
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</table>

| Total Credits | 14 |

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
<th>Recommended</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LFRE 101</td>
<td>First-Year French II</td>
<td>X</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
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<td></td>
<td>3B</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
<td>3C</td>
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</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>CO 150 must be completed by the end of Semester 2.</td>
<td>X</td>
<td></td>
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| Total Credits | 16 |

#### Sophomore

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<thead>
<tr>
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<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LFRE 200</td>
<td>Second-Year French I (GT-AH4)</td>
<td>X</td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
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<td>3E</td>
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</tr>
<tr>
<td>Elective</td>
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</tr>
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</table>

| Total Credits | 15 |

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 201</td>
<td>Second-Year French II (GT-AH4)</td>
<td>X</td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
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| Total Credits | 15 |
| Biological and Physical Sciences | 3A | 4 |
| Mathematics | X | 1B | 3 |
| **Total Credits** | 13 |

**Junior**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LFRE 300 Reading and Writing for Communication-French</td>
<td>X</td>
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<tr>
<td>Upper-Division LFRE Elective (See List on Concentration Requirements Tab)</td>
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<td>3</td>
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<tr>
<td><strong>Electives</strong></td>
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<tr>
<td><strong>Total Credits</strong></td>
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<table>
<thead>
<tr>
<th>Semester 6</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LFRE 310 Approaches to French Literature</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LFRE 335 Issues in French/ Francophone Culture</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division LFRE Electives (See List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
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<td><strong>Total Credits</strong></td>
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**Senior**

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 400 Advanced French Communication Skills</td>
<td>X</td>
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</tr>
<tr>
<td>Select one course from the following:</td>
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<td>3</td>
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<tr>
<td>LFRE 433A Advanced French/ Francophone Culture: Representations</td>
<td>X</td>
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<td>4A</td>
<td></td>
</tr>
<tr>
<td>LFRE 433B Advanced French/ Francophone Culture: Center and Margins</td>
<td>X</td>
<td></td>
<td>4A</td>
<td></td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>LFRE 450 Selected French Literary Movements and Periods</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LFRE 452 Genre Studies in French</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>LFRE 453 Author Studies in French</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>LFRE 454 Topic Studies in French</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>LFRE 460 French/ Francophone Women Writers</td>
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<td>X</td>
<td></td>
<td></td>
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<tr>
<td>LFRE 492 Seminar-French Language, Literature, and Society</td>
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<td>4B,4C</td>
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<tr>
<td><strong>Electives</strong></td>
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<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>LFRE 492 Seminar-French Language, Literature, and Society</td>
<td>X</td>
<td></td>
<td>4B,4C</td>
<td></td>
</tr>
<tr>
<td>LGEN 492 Language, Literature, and Society-General</td>
<td>X</td>
<td></td>
<td>4B,4C</td>
<td></td>
</tr>
<tr>
<td>LFRE 4**</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Electives</td>
<td>X</td>
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<td>10</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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<tr>
<td><strong>Total Credits</strong></td>
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<tr>
<td><strong>Program Total Credits:</strong></td>
<td></td>
<td></td>
<td></td>
<td>120</td>
</tr>
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</table>

**Major in Languages, Literatures, and Cultures, German Concentration Requirements**

**Effective Fall 2015**

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.
### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>HIST 101 or 171</td>
<td>Western Civilization, Modern (GT-HI1)</td>
<td>3D</td>
<td>3</td>
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<tr>
<td></td>
<td>World History~ 1500-Present (GT-HI1)</td>
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<tr>
<td>LGER 100</td>
<td>First-Year German I</td>
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<tr>
<td>LGER 101</td>
<td>First-Year German II</td>
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<tr>
<td></td>
<td><strong>Arts and Humanities</strong></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td><strong>Social and Behavioral Sciences</strong></td>
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<td>3C</td>
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<td><strong>Electives</strong></td>
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### Sophomore

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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGER 200</td>
<td>Second-Year German I (GT-AH4)</td>
<td>3B</td>
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</tr>
<tr>
<td>LGER 201</td>
<td>Second-Year German II (GT-AH4)</td>
<td>3B</td>
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<tr>
<td></td>
<td><strong>Advanced Writing</strong></td>
<td>2</td>
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<tr>
<td></td>
<td><strong>Arts and Humanities</strong></td>
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<td>3B</td>
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<td></td>
<td><strong>Biological and Physical Sciences</strong></td>
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<td>3A</td>
</tr>
<tr>
<td></td>
<td><strong>Global and Cultural Sciences</strong></td>
<td>3E</td>
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<tr>
<td></td>
<td><strong>Mathematics</strong></td>
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### Junior

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<th>Description</th>
<th>AUCC</th>
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<tbody>
<tr>
<td>LGER 300</td>
<td>Reading and Writing for Communication-German</td>
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<tr>
<td></td>
<td><strong>Select three German elective courses from the following:</strong></td>
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<tr>
<td></td>
<td>LGER 301</td>
<td>Oral Communication-German</td>
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<td></td>
<td>LGER 313</td>
<td>Introduction to German Translation and Interpreting</td>
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<td>LGER 326</td>
<td>German Phonetics</td>
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<td></td>
<td>LGER 335²</td>
<td>Issues in German Culture</td>
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<td></td>
<td>LGER 336²</td>
<td>Issues in Swiss and Austrian Culture</td>
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<td>LGER 345</td>
<td>Business German</td>
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<td>LGER 355</td>
<td>20th Century German Literature</td>
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<td></td>
<td>LGER 365</td>
<td>Introduction to German Cinema Studies</td>
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<td>LGER 401</td>
<td>Advanced German Oral Communication</td>
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<td></td>
<td>LGER 413</td>
<td>Advanced German Translation and Interpreting</td>
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<td>LGER 441</td>
<td>Advanced Business German</td>
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</tr>
<tr>
<td></td>
<td>LGER 450</td>
<td>Selected German Literary Movements and Periods</td>
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<td></td>
<td>LGER 452</td>
<td>Genre Studies in German</td>
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<td>LGER 453</td>
<td>Author Studies in German</td>
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<td>LGER 454</td>
<td>Topic Studies in German</td>
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<td></td>
<td>LGER 465</td>
<td>Advanced Studies in German Film</td>
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<td></td>
<td>LGER 310</td>
<td>Approaches to German Literature</td>
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<td><strong>Select one course from the following:</strong></td>
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<tr>
<td></td>
<td>LGER 335²</td>
<td>Issues in German Culture</td>
<td>2</td>
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<td></td>
<td>LGER 336²</td>
<td>Issues in Swiss and Austrian Culture</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Electives</strong></td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
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<td>30</td>
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### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LGEN 492</td>
<td>Language, Literature, and Society-General</td>
<td>4B,4C</td>
<td>3</td>
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</tbody>
</table>

Select one from the following:

Select one course from the following:

Select one course from the following:

Select one course from the following:
LGER 492\textsuperscript{3} Seminar-German Language, Literature, and Society 4B,4C
LGER 400 Advanced German Communication Skills 3
LGER 434 Advanced German Culture 4A 3

Select one German elective course from the following not taken in the junior year:\textsuperscript{4}
LGER 401 Advanced German Oral Communication
LGER 413 Advanced German Translation and Interpreting
LGER 441 Advanced Business German
LGER 450 Selected German Literary Movements and Periods
LGER 452 Genre Studies in German
LGER 453 Author Studies in German
LGER 454 Topic Studies in German
LGER 465 Advanced Studies in German Film
LGER 492\textsuperscript{3} Seminar-German Language, Literature, and Society 4B,4C

Select one literature course from the following not taken elsewhere:
LGER 450 Selected German Literary Movements and Periods
LGER 452 Genre Studies in German
LGER 453 Author Studies in German
LGER 454 Topic Studies in German
LGER 465 Advanced Studies in German Film
LGER 492\textsuperscript{3} Seminar-German Language, Literature, and Society 4B,4C

Electives\textsuperscript{4} 17

Total Credits 32

Program Total Credits: 120

1 Select from the list of courses in category 3B of the All-University Core Curriculum (AUCC). The 200-level German courses may not be used to fulfill category 3B in this concentration.
2 Students must select either LGER 335 or LGER 336. Whichever of the two is not selected may be included among the selection of three courses in the junior year.
3 LGER 492 may be taken for up to six credits.
4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 9 elective credits must be upper-division.

Major Completion Map

Distinctive Requirements for Degree Program:
All majors and minors in the department must earn a minimum grade of C (a grade of C# is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

\textbf{Freshman}

\textbf{Semester 1}

<table>
<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
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Select one course from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>HIST 101</td>
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<td>3D</td>
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<td>HIST 171</td>
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<td>3D</td>
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<tr>
<td>LGER 100</td>
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Elective

Total Credits 14

\textbf{Semester 2}

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<tbody>
<tr>
<td>LGER 101</td>
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Arts and Humanities 3B 3
Social and Behavioral Sciences 3C 3
Electives 5

CO 150 must be completed by the end of Semester 2.

Total Credits 16
### Sophomore

**Semester 3**

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<tbody>
<tr>
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<td>X</td>
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<td></td>
<td>Arts and Humanities</td>
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<td>3B</td>
<td>3</td>
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<td></td>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
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<tr>
<td></td>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<td></td>
<td>Elective</td>
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Total Credits: 15

**Semester 4**

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<tr>
<td>LGER 201</td>
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<td>Advanced Writing</td>
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<td>Biological and Physical Sciences</td>
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Total Credits: 13

### Junior

**Semester 5**

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<th>Credits</th>
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<tbody>
<tr>
<td>LGER 300</td>
<td>Reading and Writing for Communication-German</td>
<td>X</td>
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<td></td>
<td>Upper-Division LGER Elective (See List on Concentration Requirements Tab)</td>
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Electives: 9

Total Credits: 15

**Semester 6**

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<td>LGER 310</td>
<td>Approaches to German Literature</td>
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<td>LGER 335 Issues in German Culture</td>
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<td></td>
<td>LGER 336 Issues in Swiss and Austrian Culture</td>
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Upper-Division LGER Electives (See List on Concentration Requirements Tab): 6

Electives: 3

Total Credits: 15

### Senior

**Semester 7**

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<td>LGER 400</td>
<td>Advanced German Communication Skills</td>
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<td>LGER 434</td>
<td>Advanced German Culture</td>
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<td></td>
<td>LGER 450 Selected German Literary Movements and Periods</td>
<td>X</td>
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<td></td>
<td>LGER 452 Genre Studies in German</td>
<td>X</td>
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<td></td>
<td>LGER 453 Author Studies in German</td>
<td>X</td>
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<td></td>
<td>LGER 454 Topic Studies in German</td>
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<td></td>
<td>LGER 465 Advanced Studies in German Film</td>
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<td></td>
<td>LGER 492 Seminar-German Language, Literature, and Society</td>
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Electives: 7

Total Credits: 16

**Semester 8**

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<td>Select one course from the following:</td>
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<tr>
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<td>LGER 492 Seminar-German Language, Literature, and Society</td>
<td>X</td>
<td>4B,4C</td>
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<tr>
<td></td>
<td>LGEN 492 Language, Literature, and Society-General</td>
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<td>4B,4C</td>
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<td>LGER 4**</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits: 16

Program Total Credits: 120
Major in Languages, Literatures, and Cultures, Spanish Concentration

Requirements

Effective Fall 2015

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

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<td>CO 150</td>
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<tr>
<td>HIST 101 or 171</td>
<td>Western Civilization, Modern (GT-HI1)</td>
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<td>World History~ 1500-Present (GT-HI1)</td>
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<td>LSPA 100</td>
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<tr>
<td>LSPA 101</td>
<td>First-Year Spanish II</td>
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<td>Arts and Humanities¹</td>
<td>3B</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
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<tr>
<td>LSPA 200</td>
<td>Second-Year Spanish I (GT-AH4)</td>
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<tr>
<td>LSPA 201 or 230</td>
<td>Second-Year Spanish II (GT-AH4)</td>
<td>3B</td>
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<tr>
<td>Spanish for Heritage Speakers</td>
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<tr>
<td>Advanced Writing</td>
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<td>3</td>
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<tr>
<td>Arts and Humanities¹</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Global Cultural Awareness</td>
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<tr>
<td>LSPA 300</td>
<td>Reading and Writing for Communication-Spanish</td>
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<tr>
<td>Select three courses from the following Spanish electives:</td>
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<tr>
<td>LSPA 301</td>
<td>Oral Communication-Spanish</td>
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<td>LSPA 312</td>
<td>Introduction to Spanish Linguistics</td>
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<td>LSPA 313</td>
<td>Introduction to Spanish Translation and Interpreting</td>
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<td>LSPA 326</td>
<td>Spanish Phonetics</td>
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<td>LSPA 346</td>
<td>Spanish for Health Care</td>
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<td>LSPA 365</td>
<td>Introduction to Spanish Cinema</td>
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<tr>
<td>LSPA 401</td>
<td>Advanced Spanish Oral Communication</td>
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<tr>
<td>LSPA 413</td>
<td>Advanced Spanish Translation and Interpreting</td>
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<td>LSPA 435²</td>
<td>Caribbean Culture in Hispanic Literature</td>
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<tr>
<td>LSPA 436²</td>
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<td>LSPA 437²</td>
<td>Advanced Spanish Culture</td>
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<td>LSPA 441</td>
<td>Advanced Business Spanish</td>
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<tr>
<td>LSPA 442</td>
<td>Colonial Latin American Literature</td>
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<td>LSPA 449</td>
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<td>Selected Spanish Literary Movements and Periods</td>
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<tr>
<td>LSPA 452</td>
<td>Genre Studies in Spanish</td>
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<tr>
<td>LSPA 453</td>
<td>Author Studies in Spanish</td>
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<tr>
<td>LSPA 454</td>
<td>Topic Studies in Spanish</td>
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<td>LSPA 465A</td>
<td>Studies in Foreign Film: Spain</td>
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<td>LSPA 465B</td>
<td>Studies in Foreign Film: Latin America</td>
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<td>LSPA 468</td>
<td>Spanish Vocabulary and Word Formation</td>
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<td>LSPA 470</td>
<td>Spanish Grammatical Constructions</td>
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**Senior**

Select one course from the following:  3

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>LGEN 492</td>
<td>Language, Literature, and Society-General</td>
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<tr>
<td>LSPA 492</td>
<td>Seminar-Spanish Language, Literature, and Society</td>
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<tr>
<td>LSPA 400</td>
<td>Advanced Spanish Communication Skills</td>
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Select one Spanish elective from the following not taken elsewhere:  3

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<tbody>
<tr>
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<td>Advanced Spanish Oral Communication</td>
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<tr>
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<td>Advanced Spanish Translation and Interpreting</td>
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<td>LSPA 435</td>
<td>Caribbean Culture in Hispanic Literature</td>
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<td>LSPA 436</td>
<td>Advanced Latin American Culture</td>
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<td>Advanced Business Spanish</td>
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<td>LSPA 443</td>
<td>Spanish Theatre</td>
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<td>LSPA 445</td>
<td>Women Writers in the Hispanic World</td>
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<td>LSPA 449</td>
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<td>Selected Spanish Literary Movements and Periods</td>
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<td>LSPA 452</td>
<td>Genre Studies in Spanish</td>
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<td>LSPA 470</td>
<td>Spanish Grammatical Constructions</td>
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Select one culture course not taken elsewhere from the following:  3

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<td>Caribbean Culture in Hispanic Literature</td>
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<td>LSPA 436</td>
<td>Advanced Latin American Culture</td>
</tr>
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<td>LSPA 437</td>
<td>Advanced Spanish Culture</td>
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Select one literature course not taken elsewhere from the following:  3

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<td>Colonial Latin American Literature</td>
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<td>LSPA 443</td>
<td>Spanish Theatre</td>
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<tr>
<td>LSPA 445</td>
<td>Women Writers in the Hispanic World</td>
</tr>
<tr>
<td>LSPA 449</td>
<td>Spanish-American Literary Movements and Periods</td>
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<tr>
<td>LSPA 450</td>
<td>Selected Spanish Literary Movements and Periods</td>
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<tr>
<td>LSPA 452</td>
<td>Genre Studies in Spanish</td>
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<td>LSPA 453</td>
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<td>LSPA 454</td>
<td>Topic Studies in Spanish</td>
</tr>
<tr>
<td>LSPA 492</td>
<td>Seminar-Spanish Language, Literature, and Society</td>
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</tbody>
</table>

Electives

Total Credits

Program Total Credits: 120

1. Select from the list of courses in category 3B of the AUCC. The 200-level Spanish courses may not be selected here.
2. Students must select one course from LSPA 435, LSPA 436, LSPA 437 in the senior year to fulfill AUCC category 4A. The two courses not taken to fulfill the 4A requirement may be taken in either the junior or senior year as a Spanish elective.
3. LSPA 492 may be taken for up to six credits.
4. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). A minimum of 9 credits of electives must be upper-division.

Major Completion Map

Distinctive Requirements for Degree Program:
All majors and minors in the department must earn a minimum grade of C (a grade of C# is not acceptable) in each upperdivision course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

Freshman

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<tr>
<td>Electives</td>
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<td>Total Credits</td>
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<td>16</td>
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</table>

Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LSPA 200</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
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<table>
<thead>
<tr>
<th>Semester 4</th>
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</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td>X</td>
<td>3B</td>
<td></td>
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<tr>
<td>LSPA 201</td>
<td></td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>LSPA 230</td>
<td></td>
<td></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
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Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LSPA 300</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division LSPA Elective (See List on Concentration Requirements Tab)</td>
<td>3</td>
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</table>

Total Credits: 120
Electives

| Total Credits | 9 |

**Semester 6**

<table>
<thead>
<tr>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LSPA 310</td>
<td>Approaches to Spanish Literature</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>LSPA 335</td>
<td>Issues in Hispanic Culture</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division LSPA Electives (See List on Concentration Requirements Tab)</td>
<td></td>
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<td>Elective</td>
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</table>

**Senior**

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSPA 400</td>
<td>Advanced Spanish Communication Skills</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LSPA 435</td>
<td>Caribbean Culture in Hispanic Literature</td>
<td></td>
<td>4A</td>
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<tr>
<td>LSPA 436</td>
<td>Advanced Latin American Culture</td>
<td></td>
<td>4A</td>
</tr>
<tr>
<td>LSPA 437</td>
<td>Advanced Spanish Culture</td>
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<td>4A</td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>LSPA 442</td>
<td>Colonial Latin American Literature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 443</td>
<td>Spanish Theatre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 445</td>
<td>Women Writers in the Hispanic World</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 449</td>
<td>Spanish-American Literary Movements and Periods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 450</td>
<td>Selected Spanish Literary Movements and Periods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 452</td>
<td>Genre Studies in Spanish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 453</td>
<td>Author Studies in Spanish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 454</td>
<td>Topic Studies in Spanish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSPA 492</td>
<td>Seminar-Spanish Language, Literature, and Society</td>
<td></td>
<td>4B,4C</td>
</tr>
<tr>
<td>Electives</td>
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</table>

**Semester 8**

<table>
<thead>
<tr>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>LSPA 492</td>
<td>Seminar-Spanish Language, Literature, and Society</td>
<td></td>
<td>4B,4C</td>
</tr>
<tr>
<td>LGEN 492</td>
<td>Language, Literature, and Society-General</td>
<td></td>
<td>4B,4C</td>
</tr>
<tr>
<td>LSPA 4**</td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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<td>Total Credits</td>
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</tbody>
</table>

**Program Total Credits:** 120

### Major in Languages, Literatures, and Cultures, Teaching Endorsement

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and the College of Health and Human Sciences section for general information.

### Requirements

**Effective Fall 2015**

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LARA, LCHI, LFRE, LGEN, LGER, LGRK, LITA, LJPN, LKOR, LLAT, LRUS, LSGN, or LSPA subject code.

<table>
<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
</tr>
</tbody>
</table>

Select one course from the following:
### Major in Languages, Literatures, and Cultures, Teaching Endorsement

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 101</td>
<td>Western Civilization, Modern (GT-HI1)</td>
<td>3D</td>
</tr>
<tr>
<td>HIST 171</td>
<td>World History, 1500-Present (GT-HI1)</td>
<td>3D</td>
</tr>
<tr>
<td>L*** 200</td>
<td>Second Year Language I</td>
<td>3</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>L*** 201</td>
<td>Second Year Language II</td>
<td></td>
</tr>
<tr>
<td>LSPA 230</td>
<td>Spanish for Heritage Speakers</td>
<td>3B</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
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<tr>
<td>Mathematics</td>
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<td>3</td>
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<tr>
<td>Electives</td>
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<td><strong>Total Credits</strong></td>
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### Sophomore

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td>3</td>
</tr>
<tr>
<td>L*** 300</td>
<td>Reading and Writing for Communication</td>
<td>3</td>
</tr>
<tr>
<td>L*** 310</td>
<td>Approaches to Literature</td>
<td>3</td>
</tr>
<tr>
<td>L*** 326</td>
<td>Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>L*** 335</td>
<td>Issues in Culture</td>
<td>3</td>
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<tr>
<td>Arts and Humanities¹</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
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<td><strong>Total Credits</strong></td>
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### Junior

Select one course from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E 320</td>
<td>Introduction to the Study of Language</td>
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</tr>
<tr>
<td>LFRE 312</td>
<td>Introduction to French Linguistics</td>
<td></td>
</tr>
<tr>
<td>LSPA 312</td>
<td>Introduction to Spanish Linguistics</td>
<td></td>
</tr>
<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 386</td>
<td>Practicum-I-Instruction I</td>
<td>1</td>
</tr>
<tr>
<td>L*** 400</td>
<td>Advanced Communication Skills</td>
<td>3</td>
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</tbody>
</table>

Select one course from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 433A</td>
<td>Advanced French/Francophone Culture: Representations</td>
<td>4A</td>
</tr>
<tr>
<td>LFRE 433B</td>
<td>Advanced French/Francophone Culture: Center and Margins</td>
<td>4A</td>
</tr>
<tr>
<td>LGER 434</td>
<td>Advanced German Culture</td>
<td>4A</td>
</tr>
<tr>
<td>LSPA 435</td>
<td>Caribbean Culture in Hispanic Literature</td>
<td>4A</td>
</tr>
<tr>
<td>LSPA 436</td>
<td>Advanced Latin American Culture</td>
<td>4A</td>
</tr>
<tr>
<td>LSPA 437</td>
<td>Advanced Spanish Culture</td>
<td>4A</td>
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</tbody>
</table>

Select one course from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 450</td>
<td>Selected French Literary Movements and Periods</td>
<td></td>
</tr>
<tr>
<td>LFRE 452</td>
<td>Genre Studies in French</td>
<td></td>
</tr>
<tr>
<td>LFRE 453</td>
<td>Author Studies in French</td>
<td></td>
</tr>
<tr>
<td>LFRE 454</td>
<td>Topic Studies in French</td>
<td></td>
</tr>
<tr>
<td>LFRE 460</td>
<td>French/Francophone Women Writers</td>
<td></td>
</tr>
<tr>
<td>LGER 450</td>
<td>Selected German Literary Movements and Periods</td>
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</tr>
<tr>
<td>LGER 452</td>
<td>Genre Studies in German</td>
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</tr>
<tr>
<td>LGER 453</td>
<td>Author Studies in German</td>
<td></td>
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<tr>
<td>LGER 454</td>
<td>Topic Studies in German</td>
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<tr>
<td>LGER 465</td>
<td>Advanced Studies in German Film</td>
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</table>

¹ Different from preceding years.
LSPA 442  Colonial Latin American Literature
LSPA 443  Spanish Theatre
LSPA 445  Women Writers in the Hispanic World
LSPA 449  Spanish-American Literary Movements and Periods
LSPA 450  Selected Spanish Literary Movements and Periods
LSPA 452  Genre Studies in Spanish
LSPA 453  Author Studies in Spanish
LSPA 454  Topic Studies in Spanish
L*** 300- or 400-level language course  9
Arts and Humanities 1  3B  3

Total Credits  30

Senior

Select one course from the following:  3
E 324  Teaching English as a Second Language
LSPA 468  Spanish Vocabulary and Word Formation
LSPA 470  Spanish Grammatical Constructions
EDUC 450  Instruction II-Standards and Assessment
EDUC 462  Methods and Assessment in Teaching Languages
EDUC 485B  Student Teaching: Secondary
EDUC 486E  Practicum: Instruction II
EDUC 493A  Seminar: Professional Relations
L*** 492 Language, Literature, and Society 4B,4C  3
L*** 400-level language  3

Total Credits  21

Program Total Credits:  120

1  Select from the list of non-language courses in category 3B of the AUCC.

Minor in Chinese
Requirements
Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LCHI subject code. Courses taught in English may not be used to meet the requirements for the minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LCHI 105</td>
<td>First-Year Chinese I</td>
<td>9</td>
</tr>
<tr>
<td>LCHI 107</td>
<td>First-Year Chinese II</td>
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<tr>
<td>LCHI 200</td>
<td>Second-Year Chinese I (GT-AH4)</td>
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</tr>
<tr>
<td>LCHI 201</td>
<td>Second-Year Chinese II (GT-AH4)</td>
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<tr>
<td>LCHI 205</td>
<td>Intermediate Written Chinese</td>
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</tbody>
</table>

| Upper Division Courses 2 |                      | 12      |

Select a minimum of 12 credits from the following of which at least 6 credits must be at the 400-level:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCHI 304</td>
<td>Third-Year Chinese I</td>
<td></td>
</tr>
<tr>
<td>LCHI 305</td>
<td>Third-Year Chinese II</td>
<td></td>
</tr>
<tr>
<td>LCHI 309</td>
<td>Contemporary Chinese Literature and the Arts</td>
<td></td>
</tr>
<tr>
<td>LCHI 365</td>
<td>Introduction to Chinese Cinema Studies</td>
<td></td>
</tr>
<tr>
<td>LCHI 408</td>
<td>Chinese Calligraphy 3</td>
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</tr>
<tr>
<td>LCHI 496</td>
<td>Group Study-Chinese</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits  21

1  Students must complete lower-division language courses or place out of lower-division courses through placement testing. Students who place into LCHI 201 or LCHI 304 will have to replace some or all of the lower-division credits with upper-division Chinese classes or other language-appropriate department-approved (non-LCHI) courses. See the department for a list of these courses.

2  Other courses, such as LCHI 495, may be petitioned to substitute for one of the courses below.

3  LCHI 408 may only count once toward the minor.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Culture for equivalency to CSU language courses or as substitutions for CSU language courses.
Minor in French

Requirements
Effective Fall 2015

All students minoring in French must complete a minimum of 21 credits in the language of the minor, of which at least 15 credits must be upper-division (300- to 400-level).

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LFRE subject code. Courses taught in English may not be used to meet the requirements for the minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LFRE 100</td>
<td>First-Year French I</td>
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<tr>
<td>LFRE 101</td>
<td>First-Year French II</td>
<td></td>
</tr>
<tr>
<td>LFRE 106</td>
<td>First-Year French Review</td>
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<td>LFRE 108</td>
<td>Intensive French I</td>
<td></td>
</tr>
<tr>
<td>LFRE 200</td>
<td>Second-Year French I (GT-AH4)</td>
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</tr>
<tr>
<td>LFRE 201</td>
<td>Second-Year French II (GT-AH4)</td>
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</tr>
<tr>
<td>LFRE 208</td>
<td>Intensive French II</td>
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</table>

Upper Division **2,3** 15

Select a minimum of 15 credits from the following, of which at least 3 credits must be a culture or literature and at least 3 credits must be at the 400-level:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFRE 300</td>
<td>Reading and Writing for Communication-French</td>
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<tr>
<td>LFRE 301</td>
<td>Oral Communication-French</td>
<td></td>
</tr>
<tr>
<td>LFRE 310</td>
<td>Approaches to French Literature <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 312</td>
<td>Introduction to French Linguistics</td>
<td></td>
</tr>
<tr>
<td>LFRE 313</td>
<td>Introduction to French Translation and Interpreting</td>
<td></td>
</tr>
<tr>
<td>LFRE 326</td>
<td>French Phonetics</td>
<td></td>
</tr>
<tr>
<td>LFRE 335</td>
<td>Issues in French/ Francophone Culture <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 345</td>
<td>Business French</td>
<td></td>
</tr>
<tr>
<td>LFRE 355</td>
<td>20th Century French Literature <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 365</td>
<td>Introduction to French Cinema Studies <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 400</td>
<td>Advanced French Communication Skills</td>
<td></td>
</tr>
<tr>
<td>LFRE 413</td>
<td>Advanced French Translation and Interpreting</td>
<td></td>
</tr>
<tr>
<td>LFRE 433A</td>
<td>Advanced French/ Francophone Culture: Representations <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 433B</td>
<td>Advanced French/ Francophone Culture: Center and Margins <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 441</td>
<td>Advanced Business French</td>
<td></td>
</tr>
<tr>
<td>LFRE 450</td>
<td>Selected French Literary Movements and Periods <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 452</td>
<td>Genre Studies in French <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 453</td>
<td>Author Studies in French <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 454</td>
<td>Topic Studies in French <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 460</td>
<td>French/ Francophone Women Writers <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LFRE 470</td>
<td>French Grammatical Constructions</td>
<td></td>
</tr>
</tbody>
</table>

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.

Minor in German

Requirements
Effective Fall 2015

All students minoring in German must complete a minimum of 21 credits in the language of the minor, of which at least 15 credits must be upper-division (300- to 400-level).

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LGER subject code. Courses taught in English may not be used to meet the requirements for the minor.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>LGER 100</td>
<td>First-Year German I</td>
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</tr>
<tr>
<td>LGER 101</td>
<td>First-Year German II</td>
<td></td>
</tr>
<tr>
<td>LGER 108</td>
<td>Intensive German I</td>
<td></td>
</tr>
<tr>
<td>LGER 200</td>
<td>Second-Year German I (GT-AH4)</td>
<td></td>
</tr>
<tr>
<td>LGER 201</td>
<td>Second-Year German II (GT-AH4)</td>
<td></td>
</tr>
<tr>
<td>LGER 208</td>
<td>Intensive German II</td>
<td></td>
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</table>

Upper Division **2,3** 15

Select a minimum of 15 credits from the following, of which at least 3 credits must be culture or literature and at least 3 credits must be at the 400-level:

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>LGER 300</td>
<td>Reading and Writing for Communication-German</td>
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<tr>
<td>LGER 301</td>
<td>Oral Communication-German</td>
<td></td>
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<tr>
<td>LGER 310</td>
<td>Approaches to German Literature <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LGER 313</td>
<td>Introduction to German Translation and Interpreting</td>
<td></td>
</tr>
<tr>
<td>LGER 326</td>
<td>German Phonetics</td>
<td></td>
</tr>
<tr>
<td>LGER 335</td>
<td>Issues in German Culture <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LGER 336</td>
<td>Issues in Swiss and Austrian Culture <strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>LGER 345</td>
<td>Business German</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
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<tr>
<td>LGER 355</td>
<td>20th Century German Literature</td>
<td>2</td>
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<tr>
<td>LGER 365</td>
<td>Introduction to German Cinema Studies</td>
<td>2</td>
</tr>
<tr>
<td>LGER 400</td>
<td>Advanced German Communication Skills</td>
<td></td>
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<tr>
<td>LGER 401</td>
<td>Advanced German Oral Communication</td>
<td></td>
</tr>
<tr>
<td>LGER 413</td>
<td>Advanced German Translation and Interpreting</td>
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<td>LGER 434</td>
<td>Advanced German Culture</td>
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<td>LGER 441</td>
<td>Advanced Business German</td>
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<td>LGER 450</td>
<td>Selected German Literary Movements and Periods</td>
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<td>LGER 452</td>
<td>Genre Studies in German</td>
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<td>LGER 453</td>
<td>Author Studies in German</td>
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<tr>
<td>LGER 454</td>
<td>Topic Studies in German</td>
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<tr>
<td>LGER 465</td>
<td>Advanced Studies in German Film</td>
<td>2</td>
</tr>
<tr>
<td>LGER 492</td>
<td>Seminar-German Language, Literature, and Society</td>
<td>2</td>
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</table>

Total Credits: 21

1. Students must complete lower-division language courses or place out of lower-division courses through the online placement test. Students who place into LGER 201 or LGER 300 will have to replace some or all of the lower-division credits with upper-division German courses or other language-appropriate, department-approved, non-LGER courses.

2. Designated courses count toward the culture or literature requirement.

3. Other courses, such as LGER 495 or LGER 290 may be petitioned to substitute for one of the courses below.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.

### Minor in Japanese

#### Requirements

**Effective Fall 2015**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LJPN subject code. Courses taught in English may not be used to meet the requirements for the minor.

#### Code

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Lower Division (6 credits may apply toward minor)</td>
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</tr>
<tr>
<td>LJPN 105</td>
<td>First-Year Japanese I</td>
<td></td>
</tr>
<tr>
<td>LJPN 107</td>
<td>First-Year Japanese II</td>
<td></td>
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<tr>
<td>LJPN 200</td>
<td>Second-Year Japanese I (GT-AH4)</td>
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<tr>
<td>LJPN 201</td>
<td>Second-Year Japanese II (GT-AH4)</td>
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<td>LJPN 208</td>
<td>Kanji Study</td>
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**Upper Division**

<table>
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<tr>
<th>Code</th>
<th>Title</th>
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</tr>
<tr>
<td>LJPN 305</td>
<td>Third-Year Japanese II</td>
<td></td>
</tr>
<tr>
<td>LJPN 365</td>
<td>Introduction to Japanese Cinema Studies</td>
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</tr>
<tr>
<td>LJPN 404</td>
<td>Historical Aspects of the Language and Society</td>
<td></td>
</tr>
<tr>
<td>LJPN 405</td>
<td>Integrated Japanese: Beyond Words</td>
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</tr>
<tr>
<td>LJPN 408</td>
<td>Advanced Kanji Study</td>
<td>2</td>
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</tbody>
</table>

Total Credits: 21

1. Students must complete lower-division language courses or place out of lower-division courses through the online placement test. Students who place into LJPN 201 or LJPN 304 will have to replace some or all of the lower-division credits with upper-division Japanese classes or other language-appropriate, department-approved, non-LJPN courses. See the department for a list of these courses.

2. LJPN 208 and LJPN 408 may only count once toward the minor.

3. Other courses, such as LJPN 495 or LJPN 496 may be petitioned to substitute for one of the courses below.

### Minor in Spanish

#### Requirements

**Effective Fall 2015**

All students minoring in Spanish must complete a minimum of 21 credits in the language of the minor, of which at least 15 credits must be upper-division (300- to 400-level).

Additional coursework may be required due to prerequisites.

All majors and minors in the department must earn a minimum grade of C (a grade of C- is not acceptable) in each upper-division course that carries the LSPA subject code. Courses taught in English may not be used to meet the requirements for the minor.

#### Code

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
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<td>LSPA 101</td>
<td>First-Year Spanish II</td>
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<tr>
<td>LSPA 106</td>
<td>First-Year Spanish Review</td>
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<td>LSPA 108</td>
<td>Intensive Spanish I</td>
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</tr>
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<td>LSPA 200</td>
<td>Second-Year Spanish I (GT-AH4)</td>
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<td>LSPA 201</td>
<td>Second-Year Spanish II (GT-AH4)</td>
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<tr>
<td>LSPA 208</td>
<td>Intensive Spanish II</td>
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<tr>
<td>LSPA 230</td>
<td>Spanish for Heritage Speakers</td>
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**Upper Division**

<table>
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<tr>
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<th>Title</th>
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<td>Third-Year Japanese I</td>
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</tr>
<tr>
<td>LJPN 305</td>
<td>Third-Year Japanese II</td>
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</tr>
<tr>
<td>LJPN 365</td>
<td>Introduction to Japanese Cinema Studies</td>
<td></td>
</tr>
<tr>
<td>LJPN 404</td>
<td>Historical Aspects of the Language and Society</td>
<td></td>
</tr>
<tr>
<td>LJPN 405</td>
<td>Integrated Japanese: Beyond Words</td>
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</tr>
<tr>
<td>LJPN 408</td>
<td>Advanced Kanji Study</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Credits: 21

Select a minimum of 12 credits from the following, of which at least 6 credits must be at the 400-level:

- LJPN 304 Third-Year Japanese I
- LJPN 305 Third-Year Japanese II
- LJPN 365 Introduction to Japanese Cinema Studies
- LJPN 404 Historical Aspects of the Language and Society
- LJPN 405 Integrated Japanese: Beyond Words
- LJPN 408 Advanced Kanji Study 2

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.
Master of Arts in Languages, Literatures and Cultures, Plan A, French Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

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<tr>
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<th>Title</th>
<th>Credits</th>
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<td>LGEN 530</td>
<td>Literary and Cultural Theory</td>
<td>3</td>
</tr>
<tr>
<td>LFRE 536</td>
<td>Topics in French Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>LFRE 5**</td>
<td>Topics in French literature</td>
<td>3</td>
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<tr>
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<td>Seminar-French</td>
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</tr>
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</tr>
<tr>
<td>LGEN 699</td>
<td>Thesis</td>
<td>6</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>34</td>
</tr>
</tbody>
</table>

A minimum of 34 credits are required to complete this program.

1 Choose from courses in selected option area(s), e.g., Women’s Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.

Master of Arts in Foreign Languages and Literatures, Plan B, French Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

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<tr>
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<tr>
<td>Selected option area</td>
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<tr>
<td>LGEN 694</td>
<td>Independent Study: Portfolio</td>
<td>3</td>
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<tr>
<td>Total Credits</td>
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<td>34</td>
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2 Designated courses count toward the culture or literature requirement.

3 Other courses, such as LSPA 495 or LGEN 290 may be petitioned to substitute for one of the courses above.

Any transferred language courses, other than gtPathways courses, will be evaluated by the Department of Languages, Literatures and Cultures for equivalency to CSU language courses or as substitutions for CSU language courses.
Master of Arts in Languages, Literatures and Cultures, Plan A, French Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

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<tr>
<td>LGEN 510</td>
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<td>1</td>
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<td>LGEN 530</td>
<td>Literary and Cultural Theory</td>
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<td>Topics in French Linguistics</td>
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<td>LFRE 692</td>
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<tr>
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<td>Thesis</td>
<td>6</td>
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</table>

Total Credits 34

A minimum of 34 credits are required to complete this program.

1 Choose a minimum of 15 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Master of Arts in Languages, Literatures and Cultures, Plan B, French Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
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<td>LGEN 530</td>
<td>Literary and Cultural Theory</td>
<td>3</td>
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<td>Topics in German literature</td>
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Total Credits 34

A minimum of 34 credits are required to complete this program.

1 Choose from courses in selected option area(s), e.g., Women’s Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or higher.

Master of Arts in Languages, Literatures and Cultures, Plan A, German Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

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</table>

Total Credits 34

A minimum of 34 credits are required to complete this program.

1 Choose from courses in selected option area(s), e.g., Women’s Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or higher.

Master of Arts in Languages, Literatures and Cultures, Plan B, German Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

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1 Choose from courses in selected option area(s), e.g., Women’s Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or higher.
Master of Arts in Languages, Literatures and Cultures, Plan A, German Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
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A minimum of 34 credits are required to complete this program.

1 Choose a minimum of 15 credits with approval of advisor and committee in the language, literature, or culture of specialization.

Master of Arts in Languages, Literatures and Cultures, Plan B, German Specialization, Foreign Languages, Literatures, and Cultures Option

Requirements
Effective Spring 2010

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<td>Literary and Cultural Theory</td>
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<td>Topics in Spanish Linguistics</td>
<td>3</td>
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<tr>
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<td>Topics in Spanish literature</td>
<td>3</td>
</tr>
<tr>
<td>LSPA 692</td>
<td>Seminar-Spanish</td>
<td>3</td>
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<tr>
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<td></td>
<td>34</td>
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</tbody>
</table>

A minimum of 34 credits are required to complete this program.

1 Choose from courses in selected option area(s), e.g., Women’s Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.

Master of Arts in Languages, Literatures and Culture, Plan A, Spanish Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

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<td>3</td>
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<tr>
<td>LSPA 692</td>
<td>Seminar-Spanish</td>
<td>3</td>
</tr>
<tr>
<td>Selected option area 1</td>
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<td>15</td>
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<tr>
<td>LGEN 699</td>
<td>Thesis</td>
<td>6</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>34</td>
</tr>
</tbody>
</table>

A minimum of 34 credits are required to complete this program.

1 Choose from courses in selected option area(s), e.g., Women’s Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.

Master of Arts in Languages, Literatures and Cultures, Plan B, Spanish Specialization, Interdisciplinary Option

Requirements
Effective Fall 2010

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>LGEN 510</td>
<td>Research Methods</td>
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</tr>
<tr>
<td>LGEN 530</td>
<td>Literary and Cultural Theory</td>
<td>3</td>
</tr>
<tr>
<td>LSPA 536</td>
<td>Topics in Spanish Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>LSPA 5**</td>
<td>Topics in Spanish literature</td>
<td>3</td>
</tr>
<tr>
<td>LSPA 692</td>
<td>Seminar-Spanish</td>
<td>3</td>
</tr>
<tr>
<td>Selected option area 1</td>
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</tr>
<tr>
<td>LGEN 694</td>
<td>Independent Study: Portfolio</td>
<td>3</td>
</tr>
<tr>
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<td>34</td>
</tr>
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A minimum of 34 credits are required to complete this program.

1 Choose from courses in selected option area(s), e.g., Women’s Studies, International Development, Political Economy, or others, as approved by advisor and committee. Nine credits must be at the 500-level or above.
### Master of Arts in Languages, Literatures and Cultures, Plan A, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option

#### Requirements

**Effective Spring 2010**

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<thead>
<tr>
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<td>Electives</td>
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<tr>
<td>LGEN 699</td>
<td>Thesis</td>
<td>6</td>
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</tbody>
</table>

**Total Credits**: 34

A minimum of 34 credits are required to complete this major.

1. Choose a minimum of 15 credits with approval of advisor and committee in the language, literature, or culture of specialization.

### Master of Arts in Languages, Literatures and Cultures, Plan B, Spanish Specialization, Foreign Languages, Literatures, and Cultures Option

#### Requirements

**Effective Spring 2010**

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</table>

**Total Credits**: 34

A minimum of 34 credits are required to complete this program.

1. Choose a minimum of 18 credits with approval of advisor and committee in the language, literature, or culture of specialization.

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### Department of History

**Office in Clark Building, Room B356**
(970) 491-6335
[history.colostate.edu](http://history.colostate.edu)

Professor Doug Yarrington, Chair

### Undergraduate Majors

- *Major in History*
  - General History Concentration
  - Language Concentration
  - Social and Behavioral Sciences Concentration
  - Social Studies Teaching Concentration

### Minors

- *Minor in History*

### Graduate Programs in History

The department offers graduate programs leading to the Master of Arts degree. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of History ([http://history.colostate.edu](http://history.colostate.edu)).

### Master Programs

- Master of Arts in History, Plan A, Liberal Arts Specialization
- Master of Arts in History, Plan B, Liberal Arts Specialization
- Master of Arts in History, Plan B, Public History Specialization, Cultural Resource Management Option
- Master of Arts in History, Plan B, Public History Specialization, Historic Preservation Option
- Master of Arts in History, Plan B, Public History Specialization, Museum Studies Option

### Courses

**History (HIST)**

**HIST 100 Western Civilization, Pre-Modern (GT-HI1)** Credits: 3 (3-0-0)

**Course Description**: Historical development of Western civilization from antiquity to the early modern era (c. 1600 C.E.)

**Prerequisite**: None.

**Terms Offered**: Fall, Spring, Summer.

**Grade Mode**: Traditional.

**Special Course Fee**: No.

**Additional Information**: Historical Perspectives 3D, History (GT-HI1).
HIST 101 Western Civilization, Modern (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical development of Western civilization from c. 1600 C.E. to the contemporary era.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 115 The Islamic World: Late Antiquity to 1500 Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world from late antiquity to the Ottoman conquest of Constantinople and the Reconquista in Spain.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 116 The Islamic World Since 1500 Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world since 1500.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 120 Asian Civilizations I (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major traditional intellectual and cultural patterns of Asia during the formative years.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 121 Asian Civilizations II (GT-HI1) Credits: 3 (3-0-0)
Course Description: Transformation of major intellectual and cultural patterns and the process of globalization in Asia.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 150 U.S. History to 1876 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major issues and themes in the development of the United States from the colonial period through Reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 151 U.S. History Since 1876 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Major issues and themes in the historical development of the United States since Reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 170 World History, Ancient-1500 (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from the ancient to modern periods.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 171 World History, 1500-Present (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from 1500 to the present.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 250 African American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 250 and ETST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 252 Asian American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 252 and ETST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 255 Native American History (GT-HI1) Credits: 3 (3-0-0)
Also Offered As: ETST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 255 and ETST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 300 Ancient Greece to 323 B.C.E. Credits: 3 (3-0-0)
Course Description: From the Bronze Age to the death of Alexander the Great, emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 301 Roman Republic
Credits: 3 (3-0-0)
Course Description: Roman history from the monarchy to the fall of the republic; special emphasis on political, cultural, and social history.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 302 Roman Empire
Credits: 3 (3-0-0)
Course Description: Roman history from the principate of Augustus to the reign of Constantine; special emphasis on political, intellectual, cultural, and social history.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 303 Hellenistic World: Alexander to Cleopatra
Credits: 3 (3-0-0)
Course Description: From Alexander the Great to Cleopatra VII, emphasizing intellectual, social, military, political, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 304 Women in Ancient Greece and Rome
Credits: 3 (3-0-0)
Course Description: Comparative study of roles of women and gender in Ancient Greece and Rome.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 308 Ancient Christianity to 500 A.D.
Credits: 3 (3-0-0)
Course Description: Growth of Christian Church from 1st to 5th century; emphasis on its role in Roman Empire; development of ecclesiastical institutions and literature.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 309 Medieval Christianity, 500-1500
Credits: 3 (3-0-0)
Course Description: Christian Church in Eastern and Western Christendom emphasizing its role in medieval society, relationship with the state, and its institutions.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 310 Medieval Europe
Credits: 3 (3-0-0)
Course Description: Political, legal, socioeconomic development of Europe from 300-1500 emphasizing emergence of major states.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 311 Medieval England
Credits: 3 (3-0-0)
Course Description: Political, social, and intellectual development of England from Romans to end of Middle Ages.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 312 Women in Medieval Europe
Credits: 3 (3-0-0)
Course Description: Women in the European Middle Ages; political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 315 Tudor Stuart England, 1485-1689
Credits: 3 (3-0-0)
Course Description: Political, economic, and social history of England from 1485-1689 emphasizing religious movements, revolution, and constitutional development.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 317 Renaissance and Reformation Europe
Credits: 3 (3-0-0)
Course Description: Development of European society during Renaissance and Reformation eras; religion, society, and the rise of nation-states.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 318 The Age of the Enlightenment
Credits: 3 (3-0-0)
Course Description: Development of European society from settlement of religious wars to French Revolution emphasizing political, economic, and intellectual trends.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HIST 319 Early Modern France, 1500-1789 Credits: 3 (3-0-0)
Course Description: Political, social, economic, religious, and cultural developments in France (16th-18th centuries) emphasizing formation of the absolutist state.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 320 Women and Gender in Europe, 1450-1789 Credits: 3 (3-0-0)
Course Description: Women and gender in western Europe (15th-18th centuries); political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 321 Industrial Society in Europe, 1600-1871 Credits: 3 (3-0-0)
Course Description: Causes and consequences of European industrialization and its impact on European Societies between 1600 and 1871.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 322 Industrial Society in Europe, 1871-1989 Credits: 3 (3-0-0)
Course Description: Causes and consequences of industrialization and its impact on European societies between 1871 and 1989.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 323 Russia Before 1700 Credits: 3 (3-0-0)
Course Description: Russia's political predecessors; contacts with Byzantium, Western Europe, and the Mongol Empire, and resulting cultural, religious, and social change.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 324 Imperial Russia Credits: 3 (3-0-0)
Course Description: Tsarist Russia from its beginnings to the November 1917 Revolution; emphasis on modern period.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 325 Ireland: Culture, Politics, Society and Nation Credits: 3 (3-0-0)
Course Description: Creation of modern Ireland from the 18th century to the present, with brief opening overview of the Celtic and Medieval periods.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 328 Modern Europe, 1815-1914 Credits: 3 (3-0-0)
Course Description: Europe in 19th century emphasizing growth of liberalism, nationalism, and industrialism.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 329 Europe in Crisis, 1914-1941 Credits: 3 (3-0-0)
Course Description: Political, social, economic developments since 1914; consequences of world wars, Great Depression, spread of totalitarianism, decline of imperialism.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 330 Eastern Europe Since 1918 Credits: 3 (3-0-0)
Course Description: Breakup of Austrian, German, Russian, Turkish Empires; successor states between wars; communist revolutions and character of East European socialist regimes.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 331 The Soviet Union Credits: 3 (3-0-0)
Course Description: Formation of Soviet system in 1918 to its demise in 1991 emphasizing emergence of an advanced socialist state.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 332 Germany Since World War I Credits: 3 (3-0-0)
Course Description: German history, culture, and everyday life from 1914 to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 333 Contemporary Europe Credits: 3 (3-0-0)
Course Description: Political, economic, social, and cultural history of major European nations since World War II.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HIST 334  European Culture in the 20th Century  Credits: 3 (3-0-0)
Course Description: Cultural developments since World War I emphasizing science, art, clash of ideologies, existentialism, youth culture, and environmental issues.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 335  Britain in the 20th Century  Credits: 3 (3-0-0)
Course Description: Political, economic, and social developments emphasizing role of Britain in world affairs and internal changes that led to welfare state.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 336  Germany from Napoleon to WWI  Credits: 3 (3-0-0)
Course Description: Modern Germany from the late eighteenth to the early twentieth centuries.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 338  The Holocaust in Historical Perspective  Credits: 3 (3-0-0)
Course Description: Comprehensive introduction to the Holocaust as a defining event of modern Jewish, European and world history. Strong emphasis on historical context, including the evolution of modern antisemitism and the rise of fascism. While the course will focus on Hitler’s singular war against European Jewry, it also examines Nazi campaigns against other targeted populations, including the disabled, Roma/Sinti, homosexuals, communists, Jehovah’s Witnesses, and others.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 339  World War II in Europe  Credits: 3 (3-0-0)
Course Description: WWII in Europe (1939-1945): military strategy, tactics; political and diplomatic events; economic and social impacts; ethnic and gender consequences.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 340  Colonial North America, 1492-1800  Credits: 3 (3-0-0)
Course Description: New World encounters between Native Americans, Europeans, and Africans, and the colonial societies they built.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 341  Eighteenth Century America  Credits: 3 (3-0-0)
Course Description: Politics, culture, and society in Colonial British America and the new United States, 1700-1815.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 342  Reconstruction and the New South  Credits: 3 (3-0-0)
Course Description: Reconstruction Era, 1865-1877, and the South to present with emphasis on purposes and results of Reconstruction.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 343  Early U.S. Republic  Credits: 3 (3-0-0)
Course Description: National growth, 1800 to 1860, emphasizing political, social, and economic developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall, (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 344  Antebellum America  Credits: 3 (3-0-0)
Course Description: U.S. history between 1848 and 1865 emphasizing causes and results of the Civil War.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 345  Civil War Era  Credits: 3 (3-0-0)
Course Description: Reconstruction Era, 1865-1877, and the South to present with emphasis on purposes and results of Reconstruction.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 347  United States, 1876-1917  Credits: 3 (3-0-0)
Course Description: Victorian way of life; rise of industry; reform movements; imperialism; World War I.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 348  United States, 1917-1945  Credits: 3 (3-0-0)
Course Description: World War I, the 1920s, the Great Depression, and World War II.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HIST 349 United States Since 1945 Credits: 3 (3-0-0)
Course Description: The Cold War, foreign and domestic affairs from Truman to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 350 United States Foreign Relations Since 1914 Credits: 3 (3-0-0)
Course Description: Main problems in U.S. foreign relations in the 20th century; especially causes and consequences of the two world wars, Great Depression and the Cold War.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 351 American West to 1900 Credits: 3 (3-0-0)
Course Description: Social, political, economic, environmental developments and intercultural relationships in trans-Mississippi West to 1900.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 352 American West Since 1900 Credits: 3 (3-0-0)
Course Description: Social, political, economic, environmental developments and intercultural relationships in trans-Mississippi West since 1900.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 353 U.S.-Mexico Borderlands Credits: 3 (3-0-0)
Course Description: Borderlands, northern Mexico, southwestern U.S.; intercultural relationships among Indian, Spanish, Mexican, U.S. cultures.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 354 American Architectural History Credits: 3 (3-0-0)
Course Description: Broad historical interpretation of the North American built environment from 1500 to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 355 American Environmental History Credits: 3 (3-0-0)
Course Description: Interaction of humans and nature in American history with emphasis on relationships between environmental, social, and cultural change.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 356 American Cultural and Intellectual History Credits: 3 (3-0-0)
Course Description: Role of American cultural and intellectual developments in American society and the world.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 357 The American Military Experience Credits: 3 (3-0-0)
Also Offered As: MLSC 357.
Course Description: Role of the armed forces in American society; development of military traditions, institutions, and practices.
Prerequisite: HIST 100 or HIST 101 or HIST 115 or HIST 120 or HIST 121 and HIST 150 or HIST 151 or HIST 170 or HIST 171.
Registration Information: Completion of 45 credits. Credit not allowed for both MLSC 357 and HIST 357.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

HIST 358 American Women's History to 1800 Credits: 3 (3-0-0)
Course Description: History of Indian, African, and European women in North America from early colonial contact through the American Revolution and into Early Republic.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 359 American Women's History Since 1800 Credits: 3 (3-0-0)
Course Description: Social, cultural, economic, and political history of women in the United States since 1800.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 360 United States Immigration History Credits: 3 (3-0-0)
Course Description: Central themes of U.S. immigration from perspective of major immigrant groups and within context of U.S. immigration policy.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 361 American Indians in the Age of Conquest Credits: 3 (3-0-0)
Course Description: American Indian history from pre-contact to the era of Indian removal (1840s) focused on the impact of colonization.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 362 American Indian Renaissance in Modern America Credits: 3 (3-0-0)
Course Description: American Indian history from the reservation era to the present with a focus on cultural and political renewal.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 363 Colorado History Credits: 3 (3-0-0)
Course Description: History of Colorado from pre-history to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HIST 364 Asian American Social Movements, 1945-Present Credits: 3 (3-0-0)
Also Offered As: ETST 364.
Course Description: Historical relationships between Asian Americans and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 364 and ETST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 365 American West Field Study Credits: 3 (2-3-0)
Course Description: Explore western U.S. history through primary sources and field trips to sites in Colorado and the West. Topic varies by semester and instructor.
Prerequisite: None.
Registration Information: Students may take course only once for credit toward degree completion. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HIST 366 African-American History to 1865 Credits: 3 (3-0-0)
Course Description: African-American history from the colonial era to the end of the Civil War.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 367 African-American History Since 1865 Credits: 3 (3-0-0)
Course Description: African-American history from the end of the Civil War to the late twentieth century.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 368 The American South Credits: 3 (3-0-0)
Course Description: The American South, 1607 to the present; plantation system, slave culture, secession, Civil War, Reconstruction, Jim Crow, Civil Rights, and the modern South.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 369 History of Sexuality in America Credits: 3 (3-0-0)
Course Description: History of sexuality in North America and the United States from the pre-colonial period to the present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 379 Economic History of the United States Credits: 3 (3-0-0)
Also Offered As: ECON 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Any 2 courses in American history; Completion of 45 credits. Credit not allowed for both HIST 379 and ECON 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 382A Study Abroad: WWII in Europe - The Normandy Campaign Credits: Var[1-3] (0-0-0)
Course Description: Study abroad experience focused on understanding WWII in Europe, specifically the Normandy Campaign and its implications for the western front.
Prerequisite: HIST 100 to 99999 - at least 3 credits.
Registration Information: Written consent of instructor. Since this is a travel course, students will apply through the Education Abroad office.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 410 Colonial Latin America Credits: 3 (3-0-0)
Course Description: Spanish and Portuguese America from pre-Columbian times through independence (c. 1825).
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 411  Latin America Since Independence  Credits: 3 (3-0-0)
Course Description: Major trends in the social, cultural, political, and economic evolution of Spanish America and Brazil since independence.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 412  Mexico  Credits: 3 (3-0-0)
Course Description: Social, economic, and political development of Mexican people from pre-Columbian times to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 414  Revolutions in Latin America  Credits: 3 (3-0-0)
Course Description: Historical and theoretical issues arising from revolutionary episodes in Latin America, with emphasis on 20th century case studies.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 420  Africa: Precolonial States and Empires  Credits: 3 (3-0-0)
Course Description: Origins of societal and political development in Africa before 1800; technology, the environment, human migrations, and trade.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 421  Africa: Colonialism to Independence  Credits: 3 (3-0-0)
Course Description: Africa from abolition of the slave trade to independence, focusing on economic, social, and political change under colonialism.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 422  Modern Africa  Credits: 3 (3-0-0)
Course Description: Colonial roots of modern Africa focusing on the period since 1935. Case studies of social and political change in Africa since World War II.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 423  South African History  Credits: 3 (3-0-0)
Course Description: South African history from human origins to the end of Apartheid.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 424  East African History  Credits: 3 (3-0-0)
Course Description: Overview of East African history from human origins to modern times, focusing on Kenya, Tanzania, and Uganda.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 430  Ancient Near East  Credits: 3 (3-0-0)
Course Description: Neolithic period to 500 B.C.E. emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 431  Ancient Israel  Credits: 3 (3-0-0)
Course Description: Ancient Israel and the Near Eastern world of the Hebrew Bible/Old Testament.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 432  Sacred History in the Bible and the Qur'an  Credits: 3 (3-0-0)
Course Description: Conceptions of sacred history in the Biblical and Qur'anic traditions, emphasizing pre-modern historiography and exegesis.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 433  Muhammad and the Origins of Islam  Credits: 3 (3-0-0)
Course Description: Emergence of Islam and growth of the Islamic community from time of Muhammad to decline of the Arab Caliphate.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 435  Jihad and Reform in Islamic History  Credits: 3 (3-0-0)
Course Description: Jihad and reform in classical and modern Islamic thought and practice.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 436A  Study Abroad--Pre & Post Travel: The Land of Israel--Past and Present  Credits: 3 (2-0-1)
Course Description: Physical geography, material culture, history of Israel: ancient, medieval, and modern.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 436B  Study Abroad: The Land of Israel--Past and Present  Credit: 1 (0-0-1)
Course Description: Physical geography, material culture, history of Israel: ancient, medieval, and modern.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 438  The Modern Middle East  Credits: 3 (3-0-0)
Course Description: Historical developments in the Middle East in the 19th and 20th centuries.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 440  Modern South Asia: Colonialism and Nationalism  Credits: 3 (3-0-0)
Course Description: Completion of 45 credits. Sections may be offered: Online.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 441  South Asia Since Independence  Credits: 3 (3-0-0)
Course Description: Major political, social, economic, and cultural developments in South Asia after independence.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 450  Ancient China  Credits: 3 (3-0-0)
Course Description: Development of civilizations in China from Neolithic times to 200 B.C.E.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 451  Medieval China and Central Asia  Credits: 3 (3-0-0)
Course Description: Historical developments in China and Central Asia from 200 B.C.E. to 1300 C.E.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 452  China in the Modern World, 1600-Present  Credits: 3 (3-0-0)
Course Description: Historical developments in China since 1600.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 455  Tokugawa and Modern Japan, 1600-Present  Credits: 3 (3-0-0)
Course Description: Historical developments in Japan since 1600.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 456  East Asia in the Age of Empire, 1800-Present  Credits: 3 (3-0-0)
Course Description: Rise of modern imperialism in East Asia, both from without (the "West") and from within (Japan), 1800-present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 460  Slavery in the Americas  Credits: 3 (3-0-0)
Course Description: Slave labor; Atlantic world economy; African contributions to American culture; gender and racial dynamics; emancipation movements.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 461  Rise and Fall of British Empire 1600-1947  Credits: 3 (3-0-0)
Course Description: Beginnings of globalization; its origins in the spread of the British Empire; major causes of expansion, forms of control, long-term effects.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 463  Science and Technology in Modern History  Credits: 3 (3-0-0)
Course Description: Impact of science and technology on industry, agriculture, medicine, education, etc. Issues in science and technology policy.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 464 Pacific Wars: Philippines-WWII Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the Philippines war through WWII.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 465 Pacific Wars: Korea and Vietnam Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the war in Korea through the war in Vietnam.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 466 U.S.-China Relations Since 1800 Credits: 3 (3-0-0)
Course Description: United States-China relations as represented in travel narratives, memoirs, journalistic and diplomatic writing, biography, and autobiography.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 467 Modern Jewish History Credits: 3 (3-0-0)
Course Description: Political, social, cultural, and economic dimensions of modern Jewish history from both a regional and global perspective.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 469 The Crusades Credits: 3 (3-0-0)
Course Description: The Crusades, emphasizing religion, politics, and warfare in Western Europe, Byzantium, the Near East, and the Mongol world empire, c. 1050-1300.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 470 World Environmental History, 1500-Present Credits: 3 (3-0-0)
Course Description: World environmental history since 1500, emphasizing the dynamic interaction of nature, culture, and human activity.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 471 History of Antarctica, 1800-Present Credits: 3 (3-0-0)
Course Description: History of Antarctica from discovery in the early nineteenth century to the present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 472 History in the Digital Age Credits: 3 (3-0-0)
Course Description: Examine recent works of digital history and explore the critical issues and technologies used in digital history.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 473 History of America's National Parks Credits: 3 (3-0-0)
Course Description: The national park system and its development from concept to design to implementation.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 474 Heritage Resource Management Credits: 3 (3-0-0)
Also Offered As: ANTH 478.
Course Description: Cultural resource laws and policy; practices commonly employed in the management and preservation of these diverse resources.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior or senior standing. Credit not allowed for both HIST 478 and ANTH 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 475 Practice of Public History Credits: 3 (3-0-0)
Course Description: Public history methods and career paths into interpretation, museums, archives, historic preservation, oral history, and other fields.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HIST 484  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Assisting the instructor in teaching introductory
history courses; relevant readings and discussions.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10
combined credits for all 384 and 484 courses are counted towards
graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HIST 487  Internship  Credits: Var[1-3] (0-0-0)
Course Description: Application of historical methods in museums,
libraries, and at historic sites.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10
combined credits for all 384 and 484 courses are counted towards
graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 492  Capstone Seminar  Credits: 3 (0-0-3)
Course Description: Seminar involving critical reading, writing, research,
and discussion. Topics vary by instructor.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post
Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing; history majors only. To count
toward the major, the course must be completed with a grade of C or
better.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 495  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 497  Group Study  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 501  Historical Method: Historiography  Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods, emphasis on
research, writing, and interpretation.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 502  Historical Method: Archives  Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on fundamentals of archival science.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 503  Historical Method: Preservation  Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on theory and practice of historic preservation.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 504  Historical Method: Museums  Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods; emphasis on philosophy and practices of history museums.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 511  Reading Seminar: U.S. to 1877  Credits: 3 (0-0-3)
Course Description: Readings on United States history to 1877.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 512  Reading Seminar: U.S. Since 1877  Credits: 3 (0-0-3)
Course Description: Readings on United States history since 1877.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 515  Records Management  Credits: 3 (3-0-0)
Course Description: Basic records management techniques and concepts such as retention, vital records, disaster planning, and electronic records.
Prerequisite: HIST 501.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 520  Reading Seminar-Europe to 1815  Credits: 3 (0-0-3)
Course Description: Readings on European history to 1815.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 521  Reading Seminar-Europe Since 1815  Credits: 3 (0-0-3)
Course Description: Readings on European history since 1815.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 530  Reading Seminar: Africa  Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in African
history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 531  Reading Seminar: Latin America  Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in Latin
American history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 532  Reading Seminar: Middle East  Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in Middle
East history.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 533  Reading Seminar: East Asia  Credits: 3 (0-0-3)
Course Description: Readings on major historiographical issues in East
Asian history.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 539  Reading Seminar--World Environmental History  Credits: 3 (0-0-3)
Course Description: Major works in the field of world environmental
history and the major historiographical debates.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 540  Material Culture  Credits: 3 (0-0-3)
Course Description: Social, cultural, economic, and political
developments in history as interpreted through artifacts.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 586  Practicum  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 587  Internship  Credits: Var[1-6] (0-0-0)
Course Description: Work-oriented instruction involving implementation
of classroom and laboratory experiences coordinated by a faculty
member.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 611  Research Seminar: United States  Credits: 3 (0-0-3)
Course Description: Research in United States history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 621  Research Seminar: Europe  Credits: 3 (0-0-3)
Course Description: Research in European history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 640  Research Seminar: State and Local History  Credits: 3 (0-0-3)
Course Description: Research in and interpretation of state and local
history within the broader context of United States history.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: Discussions and readings to enhance teaching
proficiency.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 697  Group Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in History

History is an account of our human past and seeks to interpret the course of human affairs through evidence and reason. Historians use written records, images, artifacts, and other materials to understand the past and also the relationship between the past and the present. Historians ask not only what happened and why, but also how the present came to be. History provides insights into how individuals and groups made decisions, exercised power, and responded to change. History helps us to understand how processes—such as revolution, migration, war, ecological disturbance, and globalization—shaped societies over time. It helps us to understand how people grappled with class, ethnicity, gender, and race, and how they conceptualized the world through religion and ideology. History provides a form of knowledge that people in all times and places have used to answer basic questions about the human predicament.

The History major is designed for students to enlarge their knowledge about the past, improve their ability to think logically and critically, and sharpen their powers of written and oral expression. It is an outstanding choice for students planning further professional study in law, medicine, ministry, academia, business, and many other fields.

Learning Outcomes

Students will demonstrate:

• Ability to analyze and interpret historical materials, such as documents, artifacts, and images
• Ability to engage in chronological reasoning, to understand causation and change over time
• Ability to examine critically how people in the past understood their own history, in scholarly works and in popular forms such as myths or commemorations
• Ability to interpret, write, and speak about the past using evidence and according to the standards and expectations of the historical discipline

Potential Occupations

Government official in foreign service, national security, military, cultural resources management, and other areas.
History teacher in public and private schools; any professional occupation in business or public service requiring a liberal arts education and skills in research, writing, and the analysis of information. With additional graduate training: lawyer, physician, social worker, minister, librarian, museum curator, archivist, professor, educational administrator, or other professional.

Concentrations

• General History Concentration
• Language Concentration
• Social and Behavioral Sciences Concentration
• Social Studies Teaching Concentration

Major in History, General History Concentration

The General History concentration is an excellent choice for students planning careers in history, government service, and other professional occupations requiring broad intellectual and practical skills. History majors who select the General History concentration must complete another major or minor offered at CSU (except History).

Requirements

Effective Spring 2016

A minimum grade of C (2.00) must be earned in HIST 492 and all 100-level courses required in the history major.

Freshman

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Minor or Second Major

Arts and Humanities

Biological and Physical Sciences

Social and Behavioral Sciences

3B 3
3A 7
3C 3
Major in History, General History Concentration

Mathematics 1B 3
Elective 3
Total Credits 31

Sophomore

HIST 1** History, 100-level 3
History Elective, Upper-Division 2 3
Minor or Second Major 1 6
Advanced Writing 2 3
Arts and Humanities 3B 3
Global and Cultural Awareness 3E 3
Electives 9
Total Credits 30

Junior

HIST *** History, AUCC Category 4A (See list below) 4A 6
HIST *** History, Upper-Division non U.S. 3 3
HIST *** History, Upper-Division U.S. 4 3
Minor or Second Major 1 6
Electives 12
Total Credits 30

Senior

HIST 492 Capstone Seminar 4A,4B,4C 3
History electives, Upper-Division 2 6
Minor or Second Major 1 6-15
Electives 5 6-15
Total Credits 29

Program Total Credits: 120

History, AUCC Category 4A Courses

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<td>Modern Africa</td>
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<td>South African History</td>
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<td>HIST 430</td>
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<td>Ancient Israel</td>
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<td>Sacred History in the Bible and the Qur'an</td>
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<td>Muhammad and the Origins of Islam</td>
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<td>Modern South Asia: Colonialism and Nationalism</td>
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<td>South Asia Since Independence</td>
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<td>HIST 450</td>
<td>Ancient China</td>
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<td>HIST 451</td>
<td>Medieval China and Central Asia</td>
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<td>HIST 452</td>
<td>China in the Modern World, 1600-Present</td>
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<td>HIST 455</td>
<td>Tokugawa and Modern Japan, 1600-Present</td>
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Major in History, General History Concentration

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<td>Rise and Fall of British Empire 1600-1947</td>
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<td>HIST 463</td>
<td>Science and Technology in Modern History</td>
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<td>HIST 464</td>
<td>Pacific Wars: Philippines-WWII</td>
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<td>HIST 465</td>
<td>Pacific Wars: Korea and Vietnam</td>
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<td>HIST 466</td>
<td>U.S.-China Relations Since 1800</td>
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<td>HIST 469</td>
<td>The Crusades</td>
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<td>HIST 479</td>
<td>Practice of Public History</td>
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History, Upper-Division Course Categories

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<td>HIST 340 - HIST 379</td>
<td>North America/US</td>
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<td>HIST 410 - HIST 419</td>
<td>Latin America</td>
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<td>HIST 420 - HIST 429</td>
<td>Africa</td>
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<td>HIST 430 - HIST 439</td>
<td>Middle East</td>
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<td>HIST 450 - HIST 459</td>
<td>East Asia</td>
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<td>HIST 460 - HIST 471</td>
<td>World/Trans-regional</td>
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1. Students must complete a minor or second major to fulfill the requirements for the major in History, General History concentration. Select any minor offered at CSU except the History minor for a minimum of 21 credits; or select any second major offered at CSU for a minimum of 27 credits.

2. Students may not count more than 3 credits of HIST 484 and HIST 487 toward their history Upper-Division electives requirement.

3. Select one Upper-Division course from one of the following categories: Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional. See Upper-Division Course Categories table.

4. Select one Upper-Division course from the North America/US category.

5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students must earn a C or better in all 100-level History classes and HIST 492 capstone.

Freshman

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<td>HIST 120 Asian Civilizations I (GT-HI1)</td>
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<td>HIST 170 World History, Ancient-1500 (GT-HI1)</td>
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Total Credits 15

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<td>HIST 121 Asian Civilizations II (GT-HI1)</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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### Major in History, Language Concentration

The Language concentration is an especially appropriate choice for students who plan to pursue graduate study in history or international affairs, and for those who hope to work in the areas of national security, diplomacy, or international business.

### Requirements

**Effective Spring 2016**

A minimum grade of C (2.000) must be earned for HIST 492 and all 100-level courses required in the history major.

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#### Junior

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Senior

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<td>American West to 1900</td>
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HIST 354  American Architectural History  4A  3
HIST 355  American Environmental History  4A  3
HIST 356  American Cultural and Intellectual History  4A  3
HIST 357/MLSC 357  The American Military Experience  4A  3
HIST 359  American Women's History Since 1800  4A  3
HIST 360  United States Immigration History  4A  3
HIST 410  Colonial Latin America  4A  3
HIST 412  Mexico  4A  3
HIST 414  Revolutions in Latin America  4A  3
HIST 421  Africa: Colonialism to Independence  4A  3
HIST 422  Modern Africa  4A  3
HIST 423  South African History  4A  3
HIST 430  Ancient Near East  4A  3
HIST 431  Ancient Israel  4A  3
HIST 432  Sacred History in the Bible and the Qur'an  4A  3
HIST 433  Muhammad and the Origins of Islam  4A  3
HIST 438  The Modern Middle East  4A  3
HIST 440  Modern South Asia: Colonialism and Nationalism  4A  3
HIST 441  South Asia Since Independence  4A  3
HIST 450  Ancient China  4A  3
HIST 451  Medieval China and Central Asia  4A  3
HIST 452  China in the Modern World, 1600-Present  4A  3
HIST 455  Tokugawa and Modern Japan, 1600-Present  4A  3
HIST 461  Rise and Fall of British Empire 1600-1947  4A  3
HIST 463  Science and Technology in Modern History  4A  3
HIST 464  Pacific Wars: Philippines-WWII  4A  3
HIST 465  Pacific Wars: Korea and Vietnam  4A  3
HIST 466  U.S.-China Relations Since 1800  4A  3
HIST 469  The Crusades  4A  3
HIST 479  Practice of Public History  4A  3

History, Upper-Division Course Categories

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<td>HIST 410 - HIST 419</td>
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1 Placement exam required.
2 Foreign language courses are in separate prefixes (all starting with L and followed by three letters designating the language, e.g., LFRE is French, LGER is German, etc.).
Students may not count more than 3 credits of HIST 484 and HIST 487 toward their history Upper-Division electives requirement.

Select one Upper-Division course from one of the following categories: Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional. See Upper-Division Course Categories table.

Select one Upper-Division course from the North America/US Category.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).

### Distinctive Requirements for Degree Program:

Students must earn a C or better in all 100-level History classes and HIST 492 capstone.

#### Freshman

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**Total Credits** | | | | 15 |

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<tr>
<td>L*** 201 Second Year Language II</td>
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<td>History Elective, Upper-Division</td>
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<td>Advanced Writing</td>
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<td></td>
<td></td>
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<tr>
<td>HIST 1*** History, 100-level must be completed by the end of Semester 4.</td>
<td></td>
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**Total Credits** | | | | 15 |

#### Junior

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<td>4A 3</td>
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---

**Notes:**

- Students who are transferring should confirm that courses are equivalent.
- All electives must be approved by the department.
- **AUCC** stands for Academic and Career Guidance Center.
- **X** indicates a course must be completed by the end of the specified semester.
Select one course from the following:
- HIST*** History, Upper-Division non-U.S.
- HIST*** History, Upper-Division U.S.

Electives
Upper-Division Elective

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<tr>
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<td>Select one course from the following, must be from category not taken in Semester 5:</td>
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- HIST*** History, Upper-Division non-U.S.
- HIST*** History, Upper-Division U.S.
| Elective | 3 |
| Upper-Division Electives | 6 |
| Total Credits | 15 |

Senior

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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Program Total Credits:** 120

---

**Major in History, Social and Behavioral Sciences Concentration**

The Social and Behavioral Sciences concentration is intended to facilitate the timely graduation of History majors who decide to transition from the Social Studies Teaching concentration to another concentration in their third or fourth year of study at CSU.

**Requirements**

**Effective Spring 2016**

A minimum grade of C (2.000) must be earned for HIST 492 and all 100-level courses required in the history major.

**Freshman**

<table>
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<tr>
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<td>CO 150 College Composition (GT-CO2)</td>
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<td>Select one course from the following:</td>
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</table>
- HIST 100 Western Civilization, Pre-Modern (GT-HI1) | 3D |
- HIST 115 The Islamic World: Late Antiquity to 1500 | 3D |
- HIST 120 Asian Civilizations I (GT-HI1) | 3D |
- HIST 170 World History, Ancient-1500 (GT-HI1) | 3D |
| Select one course from the following: | 3 |
- HIST 101 Western Civilization, Modern (GT-HI1) | 3D |
- HIST 121 Asian Civilizations II (GT-HI1) | 3D |
- HIST 171 World History, 1500-Present (GT-HI1) | 3D |
| Arts and Humanities | 3B | 6 |
Biological and Physical Sciences 3A 7
Global Cultural Awareness 3E 3
Mathematics 1B 3
Elective 2
Total Credits 30

Sophomore

Select one from the following: 3
   EDUC 275  Schooling in the United States (GT-SS3) 3C
   EDUC 340  Literacy and the Learner
Select one from the following: 3
   HIST 150  U.S. History to 1876 (GT-HI1) 3D
   HIST 151  U.S. History Since 1876 (GT-HI1) 3D
Advanced Writing 2 3
Social and Behavioral Sciences 3C 3
Select courses from the following: 3-12
   ANTH, ECON, GR, POLS, PSY, SOC
Electives 6-15
Total Credits 30

Junior

HIST *** History, AUCC Category 4A (See list below) 4A 3
HIST *** History, Upper-Division non-U.S. 2 6
HIST *** History, Upper-Division U.S. 3 3
Select courses from the following: 9-18
   ANTH, ECON, GR, POLS, PSY, SOC
Electives 0-9
Total Credits 30

Senior

HIST 492  Capstone Seminar 4A,4B,4C 3
History Electives, Upper-Division 9
Electives 18
Total Credits 30

Program Total Credits: 120

History, AUCC Category 4A Courses

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<tbody>
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<td>HIST 300</td>
<td>Ancient Greece to 323 B.C.E.</td>
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<td>HIST 301</td>
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<td>4A</td>
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<td>HIST 303</td>
<td>Hellenistic World: Alexander to Cleopatra</td>
<td>4A</td>
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<td>HIST 304</td>
<td>Women in Ancient Greece and Rome</td>
<td>4A</td>
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<td>HIST 308</td>
<td>Ancient Christianity to 500 A.D.</td>
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<tr>
<td>HIST 309</td>
<td>Medieval Christianity, 500-1500</td>
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<td>HIST 311</td>
<td>Medieval England</td>
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<td>Tudor Stuart England, 1485-1689</td>
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<td>Renaissance and Reformation Europe</td>
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<td>The Age of the Enlightenment</td>
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<td>HIST 319</td>
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<td>Women and Gender in Europe, 1450-1789</td>
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<td>Russia Before 1700</td>
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<td>Imperial Russia</td>
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<td>Modern Europe, 1815-1914</td>
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<td>Europe in Crisis, 1914-1941</td>
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<td>Eastern Europe Since 1918</td>
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<td>American West to 1900</td>
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<td>U.S.-Mexico Borderlands</td>
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<td>American Cultural and Intellectual History</td>
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<td>American Women's History Since 1800</td>
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<td>United States Immigration History</td>
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<td>Colonial Latin America</td>
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<td>Mexico</td>
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<td>Revolutions in Latin America</td>
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<td>Africa: Colonialism to Independence</td>
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### History, Upper-Division Course Categories

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<td>HIST 300 - HIST 339</td>
<td>Europe</td>
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<tr>
<td>HIST 340 - HIST 379</td>
<td>North America/US</td>
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<td>HIST 410 - HIST 419</td>
<td>Latin America</td>
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<td>HIST 420 - HIST 429</td>
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<td>HIST 460 - HIST 471</td>
<td>World/Trans-regional</td>
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1. 12 of the 21 credits must be Upper-Division regular courses (300-379; 400-479).
2. Select one Upper-Division course from two categories: Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional. See Upper-Division Course Categories table.
3. Select one Upper-Division course from the North America/US Category.
4. Students may not count more than 3 credits of HIST 484 and HIST 487 toward their history Upper-Division electives requirement.
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).

### Major Completion Map

**Distinctive Requirements for Degree Program:**
Students must earn a C or better in all 100#level History classes and HIST 492 capstone.

**Freshman**

<table>
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**Semester 2**

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<td>HIST 101</td>
<td>Western Civilization, Modern (GT-HI1)</td>
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**Notes:**
1. 12 of the 21 credits must be Upper-Division regular courses (300-379; 400-479).
2. Select one Upper-Division course from two categories: Africa, East Asia, Europe, Latin America/Caribbean, Middle East, South Asia, World/Trans-regional. See Upper-Division Course Categories table.
3. Select one Upper-Division course from the North America/US Category.
4. Students may not count more than 3 credits of HIST 484 and HIST 487 toward their history Upper-Division electives requirement.
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be Upper-Division (300- to 400-level).
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<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>HIST 121</td>
<td>Asian Civilizations II (GT-HI1)</td>
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<tr>
<td>HIST 171</td>
<td>World History, 1500-Present (GT-HI1)</td>
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**Arts and Humanities**

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**Biological and Physical Sciences**

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**Global and Cultural Awareness**

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**Elective**

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**AUCC 1B (MATH), CO 150 must be completed by the end of Semester 2.**

**Total Credits**: 15

### Sophomore

**Semester 3**

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<td>HIST 150</td>
<td>U.S. History to 1876 (GT-HI1)</td>
<td>3D</td>
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**Social and Behavioral Sciences**

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<tr>
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<tbody>
<tr>
<td>ANTH, ECON, GR, POLS, PSY, or SOC Courses</td>
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**Electives**

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**Total Credits**: 15

### Semester 4

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<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
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<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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**Advanced Writing**

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**ANTH, ECON, GR, POLS, PSY or SOC Courses**

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**Electives**

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**Total Credits**: 15

### Junior

**Semester 5**

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<tr>
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<tr>
<td>HIST*** History, AUCC Category 4A (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>HIST*** History, Upper-Division non-U.S.</td>
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**Elective**

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**Total Credits**: 15

**Semester 6**

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<tbody>
<tr>
<td>Select one course from the following:</td>
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<tr>
<td>HIST*** History, Upper-Division non-U.S.</td>
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<tr>
<td>HIST*** History, Upper-Division U.S.</td>
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<tr>
<td>ANTH, ECON, GR, POLS, PSY, or SOC Courses</td>
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**Electives**

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**Total Credits**: 15

### Senior

**Semester 7**

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**Total Credits**: 15

**Semester 8**

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<tr>
<td>HIST 492</td>
<td>Capstone Seminar</td>
<td>X</td>
<td>4A,4B,4C</td>
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<tr>
<td>Upper-Division HIST Elective</td>
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<td>Electives</td>
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**Total Credits**: 15
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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<td>Program Total Credits:</td>
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**Major in History, Social Studies Teaching Concentration**

The Social Studies Teaching concentration is for students who plan to teach in middle school, junior high, or high school. Students must also complete the requirements for the social studies undergraduate teaching licensure in the College of Health and Human Sciences, Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu).

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and the College of Health and Human Sciences section, or in the Education Building, Room 111 for general information.

**Requirements**

### Effective Spring 2015

#### Freshman

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
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<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
<td>3C</td>
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Select one course from the following:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>HIST 100(^1)</td>
<td>Western Civilization, Pre-Modern (GT-HI1)</td>
<td>3D</td>
</tr>
<tr>
<td>HIST 115(^1)</td>
<td>The Islamic World: Late Antiquity to 1500</td>
<td>3D</td>
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<tr>
<td>HIST 120(^1)</td>
<td>Asian Civilizations I (GT-HI1)</td>
<td>3D</td>
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<tr>
<td>HIST 170(^1)</td>
<td>World History, Ancient-1500 (GT-HI1)</td>
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Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HIST 101(^1)</td>
<td>Western Civilization, Modern (GT-HI1)</td>
<td>3D</td>
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<tr>
<td>HIST 121(^1)</td>
<td>Asian Civilizations II (GT-HI1)</td>
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<tr>
<td>HIST 171(^1)</td>
<td>World History, 1500-Present (GT-HI1)</td>
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<tr>
<td>SPCM 200(^1)</td>
<td>Public Speaking</td>
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Arts and Humanities: 3B 3

Biological and Physical Sciences: 3A 7

Mathematics: 1B 3

Elective: 2

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#### Sophomore

Select one course from the following:

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>SOC 105</td>
<td>Social Problems (GT-SS3)</td>
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Select two courses from the following:

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<tr>
<td>ECON 101</td>
<td>Economics of Social Issues (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 211</td>
<td>Gender in the Economy (GT-SS1)</td>
<td>3E</td>
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<tr>
<td>ECON 212</td>
<td>Racial Inequality and Discrimination (GT-SS1)</td>
<td>3C</td>
</tr>
<tr>
<td>ECON 240/AREC 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td>3C</td>
</tr>
<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>3C</td>
</tr>
<tr>
<td>HIST 150(^1)</td>
<td>U.S. History to 1876 (GT-HI1)</td>
<td>3D</td>
</tr>
<tr>
<td>HIST 151(^1)</td>
<td>U.S. History Since 1876 (GT-HI1)</td>
<td>3D</td>
</tr>
<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td>3C</td>
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<table>
<thead>
<tr>
<th>Total Credits</th>
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</table>
Major in History, Social Studies Teaching Concentration

<table>
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<th>Course Code</th>
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<th>Credits</th>
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<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td>3E</td>
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<tr>
<td>Advanced Writing</td>
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**Total Credits:** 27

**Junior**

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<tbody>
<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td>2</td>
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<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>3</td>
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<tr>
<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
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<tr>
<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
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<tr>
<td>EDUC 465</td>
<td>Methods and Materials in Social Studies</td>
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<tr>
<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
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<tr>
<td>GR 320</td>
<td>Cultural Geography</td>
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<tr>
<td>HIST ***</td>
<td>History, AUCC Category 4A (See list below)</td>
<td>4A</td>
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<tr>
<td>HIST ***</td>
<td>History, upper-division non-U.S.</td>
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<tr>
<td>HIST ***</td>
<td>History, upper-division U.S.</td>
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**Total Credits:** 33

**Senior**

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<td>EDUC 485B</td>
<td>Student Teaching: Secondary</td>
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<tr>
<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
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<td>HIST 492</td>
<td>Capstone Seminar</td>
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**Arts and Humanities**

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<td>HIST ***</td>
<td>History, upper-division U.S.</td>
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**Total Credits:** 30

**Program Total Credits:** 120

### History, AUCC Category 4A Courses

Select course, with advisor approval, to fulfill the category 4A requirement. The selected course may apply towards the History, upper-division (U.S. or non-U.S.) program requirements.

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<td>Ancient Greece to 323 B.C.E.</td>
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<td>HIST 301</td>
<td>Roman Republic</td>
<td>4A</td>
<td>3</td>
</tr>
<tr>
<td>HIST 303</td>
<td>Hellenistic World: Alexander to Cleopatra</td>
<td>4A</td>
<td>3</td>
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<tr>
<td>HIST 304</td>
<td>Women in Ancient Greece and Rome</td>
<td>4A</td>
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<tr>
<td>HIST 308</td>
<td>Ancient Christianity to 500 A.D.</td>
<td>4A</td>
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<tr>
<td>HIST 309</td>
<td>Medieval Christianity, 500-1500</td>
<td>4A</td>
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<tr>
<td>HIST 311</td>
<td>Medieval England</td>
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<td>HIST 315</td>
<td>Tudor Stuart England, 1485-1689</td>
<td>4A</td>
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<tr>
<td>HIST 317</td>
<td>Renaissance and Reformation Europe</td>
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<td>HIST 318</td>
<td>The Age of the Enlightenment</td>
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<td>HIST 319</td>
<td>Early Modern France, 1500-1789</td>
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<td>HIST 320</td>
<td>Women and Gender in Europe, 1450-1789</td>
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<td>HIST 321</td>
<td>Industrial Society in Europe, 1600-1871</td>
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<td>HIST 322</td>
<td>Industrial Society in Europe, 1871-1989</td>
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<td>Russia Before 1700</td>
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<td>HIST 324</td>
<td>Imperial Russia</td>
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<td>HIST 328</td>
<td>Modern Europe, 1815-1914</td>
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<td>HIST 329</td>
<td>Europe in Crisis, 1914-1941</td>
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<td>HIST 330</td>
<td>Eastern Europe Since 1918</td>
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<td>HIST 331</td>
<td>The Soviet Union</td>
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<td>Germany Since World War I</td>
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<td>Contemporary Europe</td>
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<td>European Culture in the 20th Century</td>
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<td>Britain in the 20th Century</td>
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<td>HIST 340</td>
<td>Colonial North America, 1492-1800</td>
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<td>HIST 341</td>
<td>Eighteenth Century America</td>
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<td>HIST 343</td>
<td>Early U.S. Republic</td>
<td>4</td>
<td>A</td>
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<td>HIST 344</td>
<td>Antebellum America</td>
<td>4</td>
<td>A</td>
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<td>HIST 345</td>
<td>Civil War Era</td>
<td>4</td>
<td>A</td>
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<td>HIST 346</td>
<td>Reconstruction and the New South</td>
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<td>HIST 347</td>
<td>United States, 1876-1917</td>
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<tr>
<td>HIST 348</td>
<td>United States, 1917-1945</td>
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<td>HIST 349</td>
<td>United States Since 1945</td>
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<td>HIST 350</td>
<td>United States Foreign Relations Since 1914</td>
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<td>A</td>
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<td>HIST 351</td>
<td>American West to 1900</td>
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<td>American West Since 1900</td>
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<td>HIST 353</td>
<td>U.S.-Mexico Borderlands</td>
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<td>American Architectural History</td>
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<td>American Environmental History</td>
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<td>American Cultural and Intellectual History</td>
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<td>A</td>
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<td>HIST 357</td>
<td>The American Military Experience</td>
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<td>HIST 359</td>
<td>American Women’s History Since 1800</td>
<td>4</td>
<td>A</td>
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<td>HIST 360</td>
<td>United States Immigration History</td>
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<td>HIST 410</td>
<td>Colonial Latin America</td>
<td>4</td>
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<td>HIST 412</td>
<td>Mexico</td>
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<tr>
<td>HIST 414</td>
<td>Revolutions in Latin America</td>
<td>4</td>
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<tr>
<td>HIST 421</td>
<td>Africa: Colonialism to Independence</td>
<td>4</td>
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<tr>
<td>HIST 422</td>
<td>Modern Africa</td>
<td>4</td>
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<td>HIST 423</td>
<td>South African History</td>
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<td>HIST 430</td>
<td>Ancient Near East</td>
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<tr>
<td>HIST 431</td>
<td>Ancient Israel</td>
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<tr>
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<td>Sacred History in the Bible and the Qur’an</td>
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<tr>
<td>HIST 433</td>
<td>Muhammad and the Origins of Islam</td>
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<tr>
<td>HIST 438</td>
<td>The Modern Middle East</td>
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<tr>
<td>HIST 440</td>
<td>Modern South Asia: Colonialism and Nationalism</td>
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<tr>
<td>HIST 441</td>
<td>South Asia Since Independence</td>
<td>4</td>
<td>A</td>
</tr>
<tr>
<td>HIST 450</td>
<td>Ancient China</td>
<td>4</td>
<td>A</td>
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<tr>
<td>HIST 451</td>
<td>Medieval China and Central Asia</td>
<td>4</td>
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<tr>
<td>HIST 452</td>
<td>China in the Modern World, 1600-Present</td>
<td>4</td>
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<tr>
<td>HIST 455</td>
<td>Tokugawa and Modern Japan, 1600-Present</td>
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Major in History, Social Studies Teaching Concentration

<table>
<thead>
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<tr>
<td>HIST 461</td>
<td>Rise and Fall of British Empire 1600-1947</td>
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<td>HIST 463</td>
<td>Science and Technology in Modern History</td>
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<td>HIST 464</td>
<td>Pacific Wars: Philippines-WWII</td>
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<td>HIST 465</td>
<td>Pacific Wars: Korea and Vietnam</td>
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<td>HIST 466</td>
<td>U.S.-China Relations Since 1800</td>
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<td>HIST 469</td>
<td>The Crusades</td>
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<tr>
<td>HIST 479</td>
<td>Practice of Public History</td>
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### History, Upper-Division Course Categories

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<tr>
<td>HIST 300 - HIST 339</td>
<td>Europe</td>
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<tr>
<td>HIST 340 - HIST 379</td>
<td>North America/US</td>
<td></td>
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<tr>
<td>HIST 410 - HIST 419</td>
<td>Latin America</td>
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<tr>
<td>HIST 420 - HIST 429</td>
<td>Africa</td>
<td></td>
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<td>HIST 430 - HIST 439</td>
<td>Middle East</td>
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<td>HIST 440 - HIST 449</td>
<td>South Asia</td>
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<td>HIST 450 - HIST 459</td>
<td>East Asia</td>
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<tr>
<td>HIST 460 - HIST 471</td>
<td>World/Trans-regional</td>
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### History, Upper-Division U.S. Courses

**U.S. History Courses — Pre-1876, Post-1876, Any Period**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>HIST 340</td>
<td>Colonial North America, 1492-1800</td>
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<tr>
<td>HIST 341</td>
<td>Eighteenth Century America</td>
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<tr>
<td>HIST 343</td>
<td>Early U.S. Republic</td>
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<tr>
<td>HIST 344</td>
<td>Antebellum America</td>
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<tr>
<td>HIST 345</td>
<td>Civil War Era</td>
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<tr>
<td>HIST 351</td>
<td>American West to 1900</td>
<td>3</td>
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<tr>
<td>HIST 353</td>
<td>U.S.-Mexico Borderlands</td>
<td>3</td>
</tr>
<tr>
<td>HIST 358</td>
<td>American Women's History to 1800</td>
<td>3</td>
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<tr>
<td>HIST 361</td>
<td>American Indians in the Age of Conquest</td>
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<tr>
<td>HIST 366</td>
<td>African-American History to 1865</td>
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**U.S. History Post-1876**

<table>
<thead>
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<tr>
<td>HIST 346</td>
<td>Reconstruction and the New South</td>
<td>3</td>
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<tr>
<td>HIST 347</td>
<td>United States, 1876-1917</td>
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<tr>
<td>HIST 348</td>
<td>United States, 1917-1945</td>
<td>3</td>
</tr>
<tr>
<td>HIST 349</td>
<td>United States Since 1945</td>
<td>3</td>
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<tr>
<td>HIST 350</td>
<td>United States Foreign Relations Since 1914</td>
<td>3</td>
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<tr>
<td>HIST 352</td>
<td>American West Since 1900</td>
<td>3</td>
</tr>
<tr>
<td>HIST 353</td>
<td>U.S.-Mexico Borderlands</td>
<td>3</td>
</tr>
<tr>
<td>HIST 354</td>
<td>American Architectural History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
<td>3</td>
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<tr>
<td>HIST 356</td>
<td>American Cultural and Intellectual History</td>
<td>3</td>
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<tr>
<td>HIST 357/MLSC 357</td>
<td>The American Military Experience</td>
<td>3</td>
</tr>
<tr>
<td>HIST 359</td>
<td>American Women's History Since 1800</td>
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<td>HIST 360</td>
<td>United States Immigration History</td>
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<td>HIST 362</td>
<td>American Indian Renaissance in Modern America</td>
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<td>HIST 363</td>
<td>Colorado History</td>
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<tr>
<td>HIST 364/ETST 364</td>
<td>Asian American Social Movements, 1945-Present</td>
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## Major Completion Map

### Distinctive Requirements for Degree Program:
During their sophomore year, students must apply for admission to the licensure program. This requires completion of at least 30 credits, a minimum 3.00 GPA, and passing a criminal background check. To continue in the major, students must maintain a 3.00 GPA. Grades in all History, Social Studies and Education courses must be C or above.

### Freshman

#### Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>Select one course from the following:</td>
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<tr>
<td>HIST 100</td>
<td>Western Civilization, Pre-Modern (GT-HI1)</td>
<td></td>
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<tr>
<td>HIST 115</td>
<td>The Islamic World: Late Antiquity to 1500</td>
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<tr>
<td>HIST 120</td>
<td>Asian Civilizations I (GT-HI1)</td>
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<tr>
<td>HIST 170</td>
<td>World History, Ancient-1500 (GT-HI1)</td>
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<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<tr>
<td>Mathematics</td>
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Total Credits: 15

#### Semester 2

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<th>Course Code</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
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<tr>
<td>HIST 101</td>
<td>Western Civilization, Modern (GT-HI1)</td>
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<td>3D</td>
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<tr>
<td>HIST 121</td>
<td>Asian Civilizations II (GT-HI1)</td>
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<tr>
<td>HIST 171</td>
<td>World History, 1500-Present (GT-HI1)</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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<tr>
<td>Biological and Physical Sciences</td>
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A UCC 1B (MATH), CO 150 must be completed by the end of Semester 2.

Total Credits: 15
### Sophomore

#### Semester 3

<table>
<thead>
<tr>
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<tr>
<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
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<td></td>
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<tr>
<td>SOC 105</td>
<td>Social Problems (GT-SS3)</td>
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<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>3C</td>
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</table>

Select one course from the following:

- ECON 101 Economics of Social Issues (GT-SS1) 3C
- ECON 202 Principles of Microeconomics (GT-SS1) 3C
- ECON 204 Principles of Macroeconomics (GT-SS1) 3C
- ECON 211 Gender in the Economy (GT-SS1) 3E
- ECON 212 Racial Inequality and Discrimination (GT-SS1) 3C
- ECON 240 Issues in Environmental Economics (GT-SS1) 3C

Select one course from the following:

- HIST 150 U.S. History to 1876 (GT-HI1) 3D
- HIST 151 U.S. History Since 1876 (GT-HI1) 3D
- POLS 101 American Government and Politics (GT-SS1) 3C

**Total Credits** 15

#### Semester 4

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ECON 101</td>
<td>Economics of Social Issues (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
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<tr>
<td>ECON 211</td>
<td>Gender in the Economy (GT-SS1)</td>
<td>3E</td>
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<tr>
<td>ECON 212</td>
<td>Racial Inequality and Discrimination (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>ECON 240</td>
<td>Issues in Environmental Economics (GT-SS1)</td>
<td>3C</td>
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Select one course from the following:

- HIST 150 U.S. History to 1876 (GT-HI1) 3D
- HIST 151 U.S. History Since 1876 (GT-HI1) 3D
- POLS 241 Comparative Government and Politics (GT-SS1) 3E

Advanced Writing 2

Background Check X

EDUC 275, HIST 150, HIST 151 must be completed by the end of Semester 4. X

**Total Credits** 12

### Junior

#### Semester 5

<table>
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<th>AUCC</th>
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<tbody>
<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td>X</td>
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<tr>
<td>EDUC 465</td>
<td>Methods and Materials in Social Studies</td>
<td>X</td>
<td></td>
<td>4</td>
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<td>GR 320</td>
<td>Cultural Geography</td>
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<tr>
<td>HIST***</td>
<td>History, AUCC Category 4A (See Department List on Concentration Requirements tab) 4A</td>
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<tr>
<td>HIST***</td>
<td>Upper-Division History -U.S. or non-U.S. (See Department List on Concentration Requirements tab) 3</td>
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Admission to licensure and EDUC 340 must be completed by the end of Semester 5. X

**Total Credits** 16

#### Semester 6

<table>
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<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
<td>X</td>
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<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>X</td>
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<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
<td>X</td>
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**Total Credits** 16
Minor in History

The minor, consisting of 21 credits, allows non-majors to earn a credential in history.

Requirements

Effective Fall 1978

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<tr>
<td></td>
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<tr>
<td></td>
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<td>Appropriate courses as determined in consultation with a History Department advisor.</td>
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<tr>
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<td>Upper Division</td>
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<tr>
<td></td>
<td></td>
<td>Minimum of 12 credits</td>
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<td>Total Credits</td>
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Master of Arts in History, Plan A, Liberal Arts Specialization

Effective Fall 2011

Required Courses

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>HIST 501</td>
<td>Historical Method: Historiography</td>
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</table>

Select four of the following courses in consultation with advisor:

HIST 511 Reading Seminar: U.S. to 1877
HIST 512 Reading Seminar: U.S. Since 1877
HIST 520 Reading Seminar: Europe to 1815
HIST 521 Reading Seminar: Europe Since 1815
HIST 530 Reading Seminar: Africa
HIST 531 Reading Seminar: Latin America
HIST 532 Reading Seminar: Middle East
HIST 533 Reading Seminar: East Asia
HIST 534 Reading Seminar: South Asia
HIST 539 Reading Seminar--World Environmental History
HIST 611 Research Seminar: United States
or HIST 621 Research Seminar: Europe
500- or 600-level HIST courses | 3 |
300-, 400-, 500-, or 600-level HIST course(s) | 3-6 |
Electives | 3-6 |
HIST 699 Thesis | 3-6 |
Total Credits | 33 |

A minimum of 33 credits are required to complete this program.

1 Non-HIST subject code courses numbered 300-699.

Master of Arts in History, Plan B, Liberal Arts Specialization

Effective Fall 2011

Required Courses
HIST 501  Historical Method: Historiography  3  
Select five of the following courses in consultation with advisor: 
HIST 511  Reading Seminar: U.S. to 1877  
HIST 512  Reading Seminar: U.S. Since 1877  
HIST 520  Reading Seminar-Europe to 1815  
HIST 521  Reading Seminar-Europe Since 1815  
HIST 530  Reading Seminar: Africa  
HIST 531  Reading Seminar: Latin America  
HIST 532  Reading Seminar: Middle East  
HIST 533  Reading Seminar: East Asia  
HIST 534  Reading Seminar: South Asia  
HIST 539  Reading Seminar--World Environmental History  
HIST 611  Research Seminar: United States  3  
HIST 621  Research Seminar: Europe  3  
Electives 1  6  
Total Credits  33  
A minimum of 33 credits are required to complete this program. 

1  HIST and non-HIST subject code courses numbered 300-699. At least 3 credits must be non-HIST.

Master of Arts in History, Plan B, Public History Specialization, Cultural Resource Management Option

Effective Fall 2011

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HIST 501</td>
<td>Historical Method: Historiography</td>
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<tr>
<td>HIST 511</td>
<td>Reading Seminar: U.S. to 1877</td>
<td>3</td>
</tr>
<tr>
<td>HIST 512</td>
<td>Reading Seminar: U.S. Since 1877</td>
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Select two courses from the following: 6

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<td>HIST 520</td>
<td>Reading Seminar-Europe to 1815</td>
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<td>HIST 521</td>
<td>Reading Seminar-Europe Since 1815</td>
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</tr>
<tr>
<td>HIST 530</td>
<td>Reading Seminar: Africa</td>
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<tr>
<td>HIST 531</td>
<td>Reading Seminar: Latin America</td>
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<td>HIST 532</td>
<td>Reading Seminar: Middle East</td>
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<tr>
<td>HIST 533</td>
<td>Reading Seminar: East Asia</td>
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<td>Reading Seminar: South Asia</td>
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<tr>
<td>HIST 539</td>
<td>Reading Seminar--World Environmental History</td>
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<tr>
<td>HIST 586</td>
<td>Practicum</td>
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<td>or HIST 587</td>
<td>Internship</td>
<td></td>
</tr>
<tr>
<td>HIST 611</td>
<td>Research Seminar: United States</td>
<td>3</td>
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<tr>
<td>or HIST 640</td>
<td>Research Seminar: State and Local History</td>
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</tbody>
</table>

Required Cultural Resource Management Option Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANTH 456</td>
<td>Archaeology and the Public</td>
<td>3</td>
</tr>
<tr>
<td>or ANTH 551</td>
<td>Historical Archaeology</td>
<td></td>
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</tbody>
</table>

HIST 502  Historical Method: Archives  3  
or HIST 504  Historical Method: Museums  
HIST 503  Historical Method: Preservation  3  
Select 6 credits from the following: 6

<table>
<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ANTH 478/6</td>
<td>Heritage Resource Management</td>
<td></td>
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<tr>
<td>GR 420</td>
<td>Spatial Analysis with GIS</td>
<td></td>
</tr>
<tr>
<td>HIST 354</td>
<td>American Architectural History</td>
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<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
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<tr>
<td>HIST 362</td>
<td>American Indian Renaissance in Modern America</td>
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</tr>
<tr>
<td>HIST 476</td>
<td>History of America’s National Parks</td>
<td></td>
</tr>
<tr>
<td>HIST 540</td>
<td>Material Culture</td>
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</tr>
<tr>
<td>MGT 305</td>
<td>Fundamentals of Management</td>
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</tbody>
</table>

Total Credits  36  
A minimum of 36 credits are required to complete this program.

Master of Arts in History, Plan B, Public History Specialization, Historic Preservation Option

Effective Fall 2011

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>HIST 354</td>
<td>American Architectural History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 501</td>
<td>Historical Method: Historiography</td>
<td>3</td>
</tr>
<tr>
<td>HIST 503</td>
<td>Historical Method: Preservation</td>
<td>3</td>
</tr>
<tr>
<td>HIST 511</td>
<td>Reading Seminar: U.S. to 1877</td>
<td>3</td>
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<tr>
<td>HIST 512</td>
<td>Reading Seminar: U.S. Since 1877</td>
<td>3</td>
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<tr>
<td>HIST 502</td>
<td>Historical Method: Archives</td>
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<tr>
<td>or HIST 504</td>
<td>Historical Method: Museums</td>
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Select two of the following courses: 6

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<tr>
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<tbody>
<tr>
<td>HIST 520</td>
<td>Reading Seminar-Europe to 1815</td>
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<tr>
<td>HIST 521</td>
<td>Reading Seminar-Europe Since 1815</td>
<td></td>
</tr>
<tr>
<td>HIST 530</td>
<td>Reading Seminar: Africa</td>
<td></td>
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<tr>
<td>HIST 531</td>
<td>Reading Seminar: Latin America</td>
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<tr>
<td>HIST 532</td>
<td>Reading Seminar: Middle East</td>
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<tr>
<td>HIST 533</td>
<td>Reading Seminar: East Asia</td>
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<tr>
<td>HIST 534</td>
<td>Reading Seminar: South Asia</td>
<td></td>
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<tr>
<td>HIST 539</td>
<td>Reading Seminar--World Environmental History</td>
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<tr>
<td>HIST 586</td>
<td>Practicum</td>
<td>3</td>
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<tr>
<td>or HIST 587</td>
<td>Internship</td>
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Electives 1  6  
Total Credits  36  
A minimum of 36 credits are required to complete this program.
Master of Arts in History, Plan B, Public History Specialization, Museum Studies Option

Effective Fall 2011

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
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<tr>
<td>HIST 501</td>
<td>Historical Method: Historiography</td>
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</tr>
<tr>
<td>HIST 540</td>
<td>Material Culture</td>
<td>3</td>
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<td></td>
<td>Select two of the following courses:</td>
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</tr>
<tr>
<td>HIST 520</td>
<td>Reading Seminar-Europe to 1815</td>
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<td>HIST 521</td>
<td>Reading Seminar-Europe Since 1815</td>
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<td>HIST 530</td>
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<td>Electives</td>
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<td>6</td>
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<td></td>
<td>Total Credits</td>
<td>36</td>
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</tbody>
</table>

A minimum of 36 credits are required to complete this program.

1 HIST and/or non-HIST courses numbered 300-699, chosen in consultation with advisor.

Interdepartmental and Interdisciplinary Minors

Media Studies Minor
The Departments of Journalism and Media Communication and Communication Studies jointly offer a minor in Media Studies. See the minor in Media Studies under the College of Liberal Arts.

Music, Stage, and Sports Production Interdisciplinary Minor
The Department of Journalism and Media Communication and the School of Music, Theatre, and Dance offer an interdisciplinary minor in Music, Stage, Sports Production.

Information Science and Technology Minor
The Department of Journalism and Media Communication participates in and advises for an interdisciplinary minor in Information Science and Technology (http://catalog.colostate.edu/general-catalog/university-wide-programs/interdisciplinary-studies/information-science-technology-interdisciplinary-minor).

Graduate

Graduate Programs in Public Communication and Technology
The department offers a Master of Science degree in Public Communication and Technology for students aspiring to communication management careers in technical and scientific communication, public relations, or public information for business, industry, government, and educational institutions.

The department’s Ph.D. program in Public Communication and Technology enables students to explore the role of information in the public’s understanding of contemporary issues and the impact of new communication technologies in people’s lives. Doctoral students develop expertise in one of three areas: human behavior and technology, organizations and technology, or social policy and technology.

A description of these programs may be found in the Graduate and Professional Bulletin and the Department of Journalism and Media Communication (http://journalism.colostate.edu).

Master Programs

• Master of Science in Public Communication and Technology, Plan A
• Master of Science in Public Communication and Technology, Plan B
• Master of Communications and Media Management, Plan C (M.C.M.M.)
Ph.D.

- Ph.D. in Public Communication and Technology*

* Please see department for program of study.

Courses

Journalism and Technical Communication (JTC)

JTC 100 Media in Society (GT-SS3) Credits: 3 (3-0-0)
Course Description: Role of media in American democracy; impact of media on individuals and society.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

JTC 192 Freshman Seminar Credits: 3 (1-4-0)
Course Description: Basic journalism skills; newsgathering and newswriting.
Prerequisite: None.
Registration Information: Admission as JTC major. Credit not allowed for both JTC 192 and JTC 210. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 200 Professional Writing Credits: 3 (1-0-2)
Course Description: Basic elements of writing for professional and specialized audiences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 203 Television Studio Production Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to produce programs in a television studio.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 204 Radio Operations Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to operate a radio station.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 210 Newswriting Credits: 3 (1-4-0)
Course Description: Theory and practice in newswriting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory for face-to-face offerings. Sections may be offered: Online. Credit not allowed for both JTC 210 and JTC 192. Sections offered as Face-to-Face 03(1-4-0) or Online only 03(3-0-0).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 211 Visual Communication Credits: 3 (2-2-0)
Course Description: Theory and techniques for visually presenting information in various media industries.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 270 Analyzing Data in Journalism and Media Credits: 3 (2-0-1)
Course Description: Application of quantitative concepts and methodologies of data analysis to investigation of media and communication problems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 300 Professional and Technical Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Professional writing and presentation skills applied to students' major fields.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

JTC 301 Corporate and Professional Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Principles and practice of effective corporate communication with emphasis on written professional reports.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

JTC 305 Media and Global Cultural Identity Credits: 3 (3-0-0)
Course Description: Examines cultural diversity and how the media influences cultural identities.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 308 Mobile Media Technology and Communication  Credit: 1 (1-0-0)
Course Description: Using mobile technology as a tool in journalism.
Prerequisite: None.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 310 Copy Editing  Credits: 3 (2-2-0)
Course Description: Theory of copy preparation and editing; publication layout.
Prerequisite: JTC 100 and JTC 210.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 311 History of Media  Credits: 3 (3-0-0)
Course Description: Media development, growth, trends within context of political, social, and economic change.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 316 Multiculturalism and the Media  Credits: 3 (3-0-0)
Course Description: Media and multiculturalism with emphasis on race, ethnicity, and other protected groups.
Prerequisite: None.
Registration Information: Sophomore standing. Credit not allowed for both JTC 316 and ETST 316.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320A Reporting: General News  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320B Reporting: Sports  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320C Reporting: Business  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320D Reporting: Government and Political  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320E Reporting: Health and Medicine  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320F Reporting: Technology and Innovation  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320G Reporting: Education  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320H Reporting: Special Topics  Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 326 Online Storytelling and Audience Engagement  Credits: 3 (2-2-0)
Course Description: Production, theory, and techniques in online and mobile device storytelling, information sharing, and audience engagement.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 328 Feature Writing Credits: 3 (3-0-0)
Course Description: Theory, methods and practice of reporting and writing feature stories, including human-interest, travel/adventure, reflective and in-depth articles.
Prerequisite: JTC 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 335 Digital Photography Credits: 3 (2-2-0)
Course Description: Basic photographic theory and practice using digital camera and image processing technology.
Prerequisite: JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 340 Digital Video Editing Credits: 3 (2-2-0)
Course Description: Theory and technique of editing picture and sound on digital platforms.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 341 TV News Writing, Reporting and Producing Credits: 3 (2-2-0)
Course Description: Practical application of principles, theory, and methods used in television newswriting, reporting, and producing.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 342 Writing for Specialized Electronic Media Credits: 3 (2-2-0)
Course Description: Audience and subject research; script structure and development; narrative techniques; visual story and role of visual media as change agents.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 343 Advanced Television News Production Credits: 3 (2-2-0)
Course Description: Advanced theory and practice of reporting and producing television news; basics of television news management.
Prerequisite: JTC 341.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 345 Electronic Field Production Credits: 3 (2-2-0)
Course Description: Theory and techniques of video field production emphasizing news, current affairs, and special interest programs.
Prerequisite: JTC 340.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 347 Audio Production and Editing Credits: 3 (3-0-0)
Course Description: Principles and practice of producing, recording, mixing and editing sound for films, television, and video.
Prerequisite: JTC 340.
Registration Information: Junior Standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 350 Public Relations Credits: 3 (3-0-0)
Course Description: Public relations principles and practices of business, industry, education, and public agencies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 351 Publicity and Media Relations Credits: 3 (2-2-0)
Course Description: Public relations techniques to gain exposure in news and entertainment media.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 352 University Public Relations Credit: 1 (1-0-0)
Course Description: Overview of a multi-faceted university public relations operation, constituencies, staff, management and products.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 353 Communications Campaigns Credits: 3 (3-0-0)
Course Description: Development of professional communications programs, including analysis and research, strategy, implementation and evaluation.
Prerequisite: (JTC 210) and (JTC 350 or JTC 355 or JTC 365).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 355 Advertising Credits: 3 (3-0-0)
Course Description: Advertising principles and techniques used to develop effective advertising campaigns.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 356 Advertising Creativity and Copywriting Credits: 3 (3-0-0)
Course Description: Principles and practices producing advertising materials-print, broadcast, digital, out-of-home media, direct response, and collateral.
Prerequisite: JTC 211 and JTC 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
**JTC 357  Persuasion in Advertising  Credits: 3 (3-0-0)**

**Course Description:** Theoretical issues in the study of persuasion and its application in creating advertising campaigns.

**Prerequisite:** JTC 355.

**Registration Information:** Must register for lecture and laboratory. Sections may be offered: Online.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 358  Advertising Media Buying and Selling  Credits: 3 (3-0-0)**

**Course Description:** Principles of advertising, planning, assessment and sales for client, agency and media organization personnel.

**Prerequisite:** JTC 211 and JTC 355.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 361  Writing for Specialized Magazines  Credits: 3 (2-2-0)**

**Course Description:** Writing articles for agricultural, business, hobby, technical, trade, and other specialized periodicals whose readers use information to make decisions.

**Prerequisite:** JTC 210.

**Registration Information:** Must register for lecture and laboratory. Sections may be offered: Online.

**Term Offered:** Spring.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**JTC 363  Data Journalism  Credits: 3 (3-0-0)**

**Course Description:** Computer assisted journalistic reporting.

**Prerequisite:** JTC 211.

**Registration Information:** Junior standing. Sections may be offered: Online.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 365  Trends in Digital Communication  Credits: 3 (3-0-0)**

**Course Description:** Issues and research in computer-mediated communication relating to individuals, groups, community, and society.

**Prerequisite:** JTC 210.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 370  Web Programming for Media Producers  Credits: 3 (2-0-1)**

**Course Description:** Web programming and scripting languages used commonly in developing rich content for visual narratives.

**Prerequisite:** JTC 211.

**Registration Information:** Sophomore standing. Sections may be offered: Online.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 371  Publications Design and Production  Credits: 3 (2-2-0)**

**Course Description:** Principles of producing publications for print and electronic delivery, including newspapers, magazines, newsletters, brochures, and printed ephemera.

**Prerequisite:** JTC 211.

**Registration Information:** Must register for lecture and laboratory. Sections may be offered: Online.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 372  Web Design and Management  Credits: 3 (2-2-0)**

**Course Description:** Design, development, and management of World Wide Web content.

**Prerequisite:** JTC 210 and JTC 211.

**Registration Information:** Must register for lecture and laboratory. Sections may be offered: Online.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 373  Digital Promotion Management  Credits: 3 (3-0-0)**

**Course Description:** How organizations use digital technologies for advertising, publicity, promotional, and information purposes.

**Prerequisite:** JTC 211.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 374  Social Media Management  Credits: 3 (3-0-0)**

**Course Description:** Organizational uses of interactive media to build relationships and manage online communities.

**Prerequisite:** JTC 211.

**Registration Information:** Sections may be offered: Online.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**JTC 375  Media Ethics and Issues  Credits: 3 (3-0-0)**

**Course Description:** Practicum in using the different communication tools that comprise student media.

**Prerequisite:** None.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**JTC 376  Communication Practicum  Credits: 1,3 (0-0-0)**

**Course Description:** Practicum in using the different communication tools that comprise student media.

**Prerequisite:** None.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**JTC 377  Media Ethics and Issues  Credits: 3 (3-0-0)**

**Course Description:** Professional ethics, issues of media performance and of the relation of media systems to the social systems.

**Prerequisite:** None.

**Restriction:** Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.

**Registration Information:** Junior or senior standing. Sections may be offered: Online.

**Terms Offered:** Fall, Spring.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.
JTC 412 International Mass Communication  Credits: 3 (3-0-0)
Course Description: Media communication systems, their roles throughout the world; news flow; propaganda in national development; role of foreign correspondents.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 413 New Communication Technologies and Society  Credits: 3 (3-0-0)
Course Description: Political, economic, social, philosophical, legal, and educational impacts of new technologies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 414 Media Effects  Credits: 3 (3-0-0)
Course Description: Perspectives on audience processes and media effects on individuals and society.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 415 Communications Law  Credits: 3 (3-0-0)
Course Description: Constitutional, statutory law of political speech, obscenity, advertising, libel, privacy, copyright, information ownership and access.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 416 Global Communication Technologies  Credits: 3 (3-0-0)
Course Description: Broad-based survey of evolving and emergent global communication technologies.
Prerequisite: JTC 210.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 417 Information Graphics  Credits: 3 (2-0-1)
Course Description: Static and interactive data visualization and information design using charts, graphs, maps and other visual elements.
Prerequisite: JTC 211.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 418 Journalism, Peace, and War  Credits: 3 (3-0-0)
Course Description: How the news media can contribute to a more harmonious world, more frequent conflict resolution, and the general well-being of all people.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 419 Food and Natural Resources Communication  Credits: 3 (3-0-0)
Course Description: Natural resources issues and the role of news media, PR, and advertising and how people form beliefs about food and natural resources in communication.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 420 Advanced Reporting  Credits: 3 (1-4-0)
Course Description: Advanced techniques for gathering and evaluating information; interpretive reporting of public affairs issues.
Prerequisite: JTC 310 and JTC 320 and JTC 211.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 421 Media, Business, and Economics  Credits: 3 (3-0-0)
Course Description: Media coverage of U.S. and global business, economies, markets, recessions, crime, and government regulation.
Prerequisite: JTC 326, may be taken concurrently.
Restriction: Business Minor enrollment recommended.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 422 Entrepreneurial Journalism  Credits: 3 (3-0-0)
Course Description: The concepts and practices of developing media content solutions for the digital age.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 425 Strategic Multicultural Communication  Credits: 3 (3-0-0)
Course Description: Identify, formulate and implement effective strategies in integrated advertising and communication campaigns to effectively connect with individuals of Hispanic/Latino, African-American and Asian descent as well as the LGBT sub-segments of the general market in the U.S.; consideration of the globalized marketplace and consumers across under-served markets internationally.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 430 Advanced Digital Documentary Photography Credits: 3 (2-2-0)
Course Description: Conceptualization, production, and editing of photographic documentaries.
Prerequisite: JTC 326 and JTC 335.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 433 Advanced Video Editing Credits: 3 (3-0-0)
Course Description: Professional video editing practices, theories, and techniques with practical applications using current hardware and software.
Prerequisite: JTC 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 435 Documentary Video Production Credits: 3 (2-3-0)
Course Description: Writing, directing, and editing of long-form television documentaries.
Prerequisite: JTC 345.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 440 Advanced Electronic Media Production Credits: 3 (2-2-0)
Course Description: Techniques and concepts used in advanced media production for television.
Required field trips.
Prerequisite: JTC 341 and JTC 345.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 445 Communication in Human-Computer Interaction Credits: 3 (3-0-0)
Course Description: Evolution of human-computer interaction, from teletypewriters to virtual reality technologies.
Prerequisite: JTC 211.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 450 Public Relations Cases Credits: 3 (3-0-0)
Course Description: Analysis of specializations in the field; use of media to achieve objectives with target audiences.
Prerequisite: JTC 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 454 Travel Abroad--Media Studies in Europe Credits: 3 (2-0-1)
Course Description: Field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 456 Documentary Film as a Liberal Art Credits: 3 (2-2-0)
Also Offered As: LB 456.
Course Description: Documentary film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Credit not allowed for both JTC 456 and LB 456.
Junior or senior standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 460 Senior Capstone Credits: 3 (3-0-0)
Course Description: Integration and reflection for seniors with a career component that will prepare them for the job market.
Prerequisite: (JTC 326) and (JTC 000 to 9999 - at least 27 credits).
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 461 Writing About Science, Health, and Environment Credits: 3 (2-2-0)
Course Description: Writing about science, health, and the environment for lay audiences from a journalistic perspective.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 464 Technical Communication Credits: 3 (2-2-0)
Course Description: Writing and producing technical and scientific information for electronic and print media for professionals.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Restriction: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 465 Specialized and Technical Editing Credits: 3 (2-2-0)
Course Description: Editorial purpose, techniques, and evaluation of specialized and technical print and online information.
Prerequisite: (JTC 210 or JTC 300 or LB 300) and (JTC 211) and (JTC 326 or JTC 335 or JTC 341 or JTC 342 or JTC 351 or JTC 361 or JTC 371 or JTC 372) and (JTC 461 and JTC 464).
Restriction: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
JTC 468 Convergence and Hypermedia  Credits: 3 (3-0-0)
Course Description: Applications of theories of convergence, hypermedia, and social practices in computer-mediated communication. Development of a professional portfolio.
Prerequisite: JTC 310 and JTC 365.
Registration Information: JTC 310; JTC 365; 9 credits selected from JTC 326, JTC 372, JTC 373, or JTC 487.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 470 Transmedia Storytelling  Credits: 3 (3-0-0)
Course Description: Examining and developing transmedia storytelling techniques and products that are applied to a single topic, entity or organization.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 471 Research for Public Communicators  Credits: 3 (3-0-0)
Course Description: Skills, knowledge and strategies needed to read, interpret, evaluate, and communicate about research reports across diverse fields.
Prerequisite: STAT 000 to 9999 - at least 1 course or ST 000 to 9999 - at least 1 course or STCC 000 to 9999 - at least 1 course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 482 International Media Studies  Credits: 3 (0-0-3)
Course Description: A field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 484 Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 487 Internship  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Written consent of department.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 490 Workshop  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495A Independent Study: Electronic Reporting  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495B Independent Study: Editing  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495C Independent Study: Photojournalism  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495D Independent Study: Public Relations  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495E Independent Study: Readings  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495F Independent Study: Reporting  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495G Independent Study: Technical Communication  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 496 Group Study  Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
JTC 500 Communication Research and Evaluation Methods Credits: 4 (4-0-0)
Course Description: Theory and applied communication research and evaluation methodologies for assessing and improving communication in technological environment.
Prerequisite: None.
Registration Information: Credit not allowed for both JTC 500 and JTC 471.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 501 Process and Effects of Communication Credits: 4 (4-0-0)
Course Description: Examination of communication theory including communicator credibility, messages, channels, audiences, and information, behavior, and attitude change.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 511 Corporate Media Ethics and Issues Credits: 3 (3-0-0)
Course Description: Professional ethics in corporate and media settings.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 513 Impacts of New Communication Technologies Credits: Var[1-2] (0-0-0)
Course Description: Current topics and issues regarding uses and impacts of video and computer-based communication technologies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 526 Digital Media Writing and Production Credits: 3 (3-0-0)
Course Description: Writing and producing media content that will be delivered via a variety of communication channels to diverse publics.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 535 Electronic Media Regulation and Policy Credits: 3 (3-0-0)
Course Description: Role of legislators, regulatory agencies, judiciary and public in the evolution of U.S. broadcast and digital media. Implications for free press.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 540 Corporate Digital Video Editing Credits: 3 (3-0-0)
Course Description: Advanced theory and techniques of digital video editing in a corporate setting.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 544 Corporate and Institutional Media Production Credits: 3 (2-3-0)
Course Description: Advanced techniques in media production and management in corporate and institutional settings.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 545 Organizational Media Production Credits: 3 (3-0-0)
Course Description: Incorporation of multimedia content in video production in governmental, corporate and institutional media production.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 550 Public Relations Credits: 3 (3-0-0)
Course Description: Contemporary public relations principles and practices.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 560 Managing Communications Systems Credits: 3 (3-0-0)
Course Description: Examination of role, responsibilities of communication managers in translating theory into effective, applied communication programs.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568A Journalism for High School Advisers: Journalism Concepts Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 568B Journalism for High School Advisers: Newspapers Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
JTC 568C Journalism for High School Advisers: Yearbooks Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Graduate, Professional.
Special Course Fee: No.

JTC 570 Political Economy of Global Media Credits: 3 (3-0-0)
Course Description: Examination of the changing media information system worldwide and the role of social, political, legal and economic forces upon it.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 571 Digital Media Research and Evaluation Methods Credits: 3 (3-0-0)
Course Description: Basic conceptual processes and tools for conducting applied research in the field of communication; research tools in real-world professions.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 572 Corporate Web Design and Management Credits: 3 (3-0-0)
Course Description: Design, development, and management of corporate digital media content.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 573 Strategic Digital Communication Credits: 3 (3-0-0)
Course Description: Development, implementation and assessment of digital communication projects and campaigns/programs.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 574 Organizational Communication Credits: 3 (3-0-0)
Course Description: Communication in organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 576 Technology Ethics and Professional Practice Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 577 International Communication Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 578 Technology, Public Policy and Organization Credits: 3 (3-0-0)
Course Description: Examination of the role of technology in public policy in the public sector with an emphasis on new technologies.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 579 Media Management Credits: 3 (3-0-0)
Course Description: Analysis of communication management in business, government, cultural organizations, and the role of technology in shaping those organizations.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 580 Strategic Media Management Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 581 Social and Cultural Communication Theory Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 582 Media Management in Practice Credits: 3 (3-0-0)
Course Description: Analysis of communication management in business, government, cultural organizations, and the role of technology in shaping those organizations.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 583 Media Management and Organization Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 584 Strategic Communication Management Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 585 Media Management and Strategic Communication Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 586 Media Management and Policy Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 587 Media Management and Innovation Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 588 Media Management and Technology Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 589 Media Management and Research Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 590 Media Management and Practice Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 591 Media Management and Policy Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 592 Media Management and Innovation Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 593 Media Management and Technology Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 594 Media Management and Research Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 595 Media Management and Practice Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 596 Media Management and Policy Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 597 Media Management and Innovation Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 598 Media Management and Technology Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 599 Media Management and Research Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 600 Communication and Innovation Credits: 3 (3-0-0)
Course Description: Communication's role in the process of innovation as well as the diffusion of new technologies, products, ideas, behaviors and attitudes.
Prerequisite: JTC 501.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 661 Information Design Credits: 3 (3-0-0)
Course Description: Theoretical and empirical review of creation, presentation, storage, and distribution of information.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 664 Quantitative Research in Communication Credits: 3 (3-0-0)
Course Description: Advanced quantitative research methods used in communication research.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 665 Qualitative Methods in Communication Research Credits: 3 (3-0-0)
Course Description: Techniques for collecting; interpreting, analyzing qualitative communication data.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 670 Communication in the Social Processes of Risk Credits: 3 (0-0-3)
Course Description: Communication and psychological, sociological, and cultural factors shaping risk involving technology, health, environment, disasters, sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Philosophy, techniques, and approaches to teaching journalism skills courses, as supervised by faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 687 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 690 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 698 Research Credits: 3 (0-0-3)
Course Description: Development of theoretical basis and methodology for thesis or research project.
Prerequisite: JTC 500 and JTC 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 700 Colloquium in Communication and IT Credit: 1 (1-0-0)
Course Description: Orientation to graduate studies; communication theories, processes, media, and technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Course may be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
JTC 790 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 792A Seminar: Health and Risk Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792B Seminar: Human Computer Interaction Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792C Seminar: Communication Technology in Organizations Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792D Seminar: Ethics, Law, and Policy Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792E Seminar: Strategic Communication Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 792F Seminar: Media Technology and Society Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793A Seminar: Experimental Design Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793B Seminar: Survey Design Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793C Seminar: Content Analysis Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793D Seminar: Qualitative Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793E Seminar: Human Factors Credits: 3 (0-0-3)
Course Description:
Prerequisite: JTC 500.
Registration Information: JTC 500 or written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 793F Seminar: Critical and Cultural Methods Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 798 Research Credits: 3 (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Journalism and Media Communication

The study of journalism, mass communication, and specialized media combines high-level professional training with a broad foundation in the liberal arts. All students complete a common 21-credit core, including writing, multimedia, and conceptual courses, as well as a capstone course and an internship. Students work closely with a faculty advisor to select an additional 19 credits in a focus area crafted to match their career interests. Practical experience can be gained on the staffs of the daily Rocky Mountain Collegian, the award-winning campus television station CTV, College Avenue magazine, and KCSU-FM Radio. Graduating seniors present professional portfolios for assessment by panels of faculty and communication professionals from Denver and elsewhere in Colorado. Because successful communicators require broad knowledge, this flexible program encourages development of a background in the humanities, social sciences, natural sciences, and in-depth study in an area of interest outside journalism. The addition of a minor or double major in disciplines such as political science, information technology, history, economics, business, communication studies, psychology, the arts, or natural or applied sciences is possible.

The Department of Journalism and Media Communication is one of a relatively small number of departments formally recognized by the Accrediting Council on Education in Journalism and Mass Communications. Participation in volunteer activities, cooperative education opportunities, or communication-related part time jobs is highly recommended to enhance practical training and development.

Learning Outcomes

Students will demonstrate:

- Competence in writing, editing, and producing media messages as well as in planning, designing, and evaluating effective public information programs
- Knowledge and use of communication theory and research principles to guide the selection of communication audiences, message content and format, and media channels to enhance communication impact
- Understanding of the ethics, laws, and values associated with professional communication activity

Potential Occupations

The Journalism and Media Communication program emphasizes the role of mass and specialized media in society and prepares students for entry-level work in private business, government, and education. Depending upon the focus of study, students may find career opportunities in a wide variety of professional communication venues. Specific career opportunities may include: advertising copywriter, designer, or producer; agriculture writer, reporter, or editor; attorney specializing in communication law; blogger, columnist, or editorial cartoonist; college professor; communications manager or director; company spokesperson; corporate media specialist; e-mail and direct mail strategist; environmental media specialist; freelance writer, editor, or photographer; health writer, editor, or producer; marketing coordinator; media relations director or strategist; multimedia producer; non-profit communications director; novelist or non-fiction author; reporter or photojournalist for the web, magazines, newspapers, or television; owner of public relations agency or production company; professional speaker; public affairs officer for government agency; public relations agency account executive; publication designer for magazines or newspapers; radio disc jockey, reporter, or music director; reality television producer, writer, photographer, or on-camera talent; science writer or editor; social media specialist; sports writer, photographer, or producer; technical writer or editor; teacher for any level of K-12 education upon completion of appropriate licensing (see the Center for Educator Preparation (http://cep.chhs.colostate.edu)); television news anchor or program host; television or radio news program producer or director; television documentary producer; travel writer, photographer, or program host; video editor for news, corporate, or entertainment television; website designer and manager.

Requirements

Effective Spring 2015

Association for Education in Journalism and Mass Communication Accreditation Requirements

Majors in Journalism and Media Communication must take a minimum of 40 credits of JTC courses and a minimum of 72 credits outside of JTC.

Of the 72 credits outside of JTC, 21 must meet one of the following Second Field criteria with approval of advisor:

1. a Minor;
2. an Interdisciplinary Minor;
3. 21 credits in one subject code;
4. 9 credits from one subject code and 12 credits from a second subject code;
5. a selection of 21 credits comprising a Second Field developed by the student and the advisor.

Courses taken outside of the department may include All-University Core Curriculum (AUCC) courses, Minor or Second Field courses, or any other out-of-department (non-JTC) courses used to complete the major as approved by advisor.

The 40 JTC required credits include 21 credits specified in the curriculum below plus 19 credits of directed electives to create an individualized focus area from the following 4 categories (Writing, Production, Internship/Practicum, Additional credits).

Directed Electives for Individualized Focus Area

Over the sophomore, junior, and senior years, students must complete a minimum of 19 credits in an individually designed focus area. Students must select those 19 credits from among the following categories and courses in consultation with advisor, as follows:
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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<th>Credits</th>
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<tr>
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<td>Writing</td>
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<tr>
<td></td>
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<td></td>
<td>Copy Editing</td>
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<td></td>
<td>JTC 320A</td>
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<td></td>
<td>Reporting: General News</td>
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<td>JTC 320B</td>
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<td></td>
<td>Reporting: Sports</td>
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<td>JTC 320C</td>
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<td>Reporting: Business</td>
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<td>JTC 320D</td>
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<td></td>
<td>Reporting: Government and Political</td>
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<td>JTC 320E</td>
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<td>Reporting: Health and Medicine</td>
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<td>JTC 320F</td>
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<td>Reporting: Technology and Innovation</td>
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<td>JTC 320G</td>
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<td>Reporting: Education</td>
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<td>JTC 320H</td>
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<td>Reporting: Special Topics</td>
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<td>JTC 328</td>
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<td></td>
<td>Feature Writing</td>
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<td></td>
<td>JTC 341</td>
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<tr>
<td></td>
<td>TV News Writing, Reporting and Producing</td>
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<td></td>
<td>JTC 342</td>
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<tr>
<td></td>
<td>Writing for Specialized Electronic Media</td>
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<td></td>
<td>JTC 351</td>
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<td></td>
<td>Publicity and Media Relations</td>
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<td>JTC 355</td>
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<td></td>
<td>Advertising</td>
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<td></td>
<td>JTC 356</td>
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<tr>
<td></td>
<td>Advertising Creativity and Copywriting</td>
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<td></td>
<td>JTC 361</td>
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<tr>
<td></td>
<td>Writing for Specialized Magazines</td>
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<td>JTC 365</td>
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<td></td>
<td>Trends in Digital Communication</td>
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<td>JTC 420</td>
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<td></td>
<td>Advanced Reporting</td>
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<td>JTC 461</td>
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<tr>
<td></td>
<td>Writing About Science, Health, and Environment</td>
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<td>JTC 464</td>
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<td></td>
<td>Technical Communication</td>
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<td>JTC 465</td>
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<td>Specialized and Technical Editing</td>
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<tr>
<td></td>
<td>Production</td>
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<td></td>
<td>Digital Photography</td>
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<td>Digital Video Editing</td>
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<td></td>
<td>Advanced Television News Production</td>
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<td>JTC 345</td>
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<td></td>
<td>Electronic Field Production</td>
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<td>JTC 353</td>
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<td>Communications Campaigns</td>
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<td>JTC 358</td>
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<td>Advertising Media Buying and Selling</td>
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<td>JTC 371</td>
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<td></td>
<td>Publications Design and Production</td>
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<td>Web Design and Management</td>
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<td>Digital Promotion Management</td>
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<td>Information Graphics</td>
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<td></td>
<td>Advanced Digital Documentary Photography</td>
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<td>JTC 433</td>
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<td>Advanced Video Editing</td>
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<td>JTC 435</td>
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<td>Documentary Video Production</td>
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<td>Public Relations Cases</td>
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<td>JTC 468</td>
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<td></td>
<td>Convergence and Hypermedia</td>
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<td></td>
<td>Internship/Practicum</td>
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<td>Select a minimum of 1 credit (a maximum of 4 credits) from the following:</td>
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<tr>
<td></td>
<td>JTC 487</td>
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<tr>
<td></td>
<td>Internship</td>
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</table>
### Additional Credits

Select six additional credits from the courses listed above under Writing, Production, Internship/Practicum, and Concept Courses and/or from the courses listed below. Students may select no more than a total of 4 credits of Internship/Practicum, and no more than a total of 7 credits of reserved number (-80 to -99) courses to satisfy this requirement.

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>JTC 350</td>
<td>Public Relations</td>
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<tr>
<td>JTC 484</td>
<td>Supervised College Teaching</td>
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<tr>
<td>JTC 490</td>
<td>Workshop</td>
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<tr>
<td>JTC 495A</td>
<td>Independent Study: Electronic Reporting</td>
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<td>JTC 495B</td>
<td>Independent Study: Editing</td>
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<tr>
<td>JTC 495C</td>
<td>Independent Study: Photojournalism</td>
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<tr>
<td>JTC 495D</td>
<td>Independent Study: Public Relations</td>
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<tr>
<td>JTC 495E</td>
<td>Independent Study: Readings</td>
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<td>JTC 495F</td>
<td>Independent Study: Reporting</td>
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<tr>
<td>JTC 495G</td>
<td>Independent Study: Technical Communication</td>
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<tr>
<td>JTC 496</td>
<td>Group Study</td>
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### Program Total Credits:

19-22

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### Freshman

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<th>AUCC</th>
<th>Credits</th>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>3</td>
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<tr>
<td>JTC 100</td>
<td>Media in Society (GT-SS3)</td>
<td>3C</td>
<td>3</td>
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<td>JTC 210</td>
<td>Newswriting</td>
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<td>3</td>
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<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
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<td></td>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>7</td>
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<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<td>Mathematics</td>
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<td>Elective</td>
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<td><strong>Total Credits</strong></td>
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### Sophomore

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<td>JTC 211</td>
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<td>Individualized Focus Area and/or Second Field courses</td>
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<td>Statistics</td>
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<td>Advanced Writing</td>
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<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
</tr>
<tr>
<td></td>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
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</tr>
</tbody>
</table>

### Junior

Select one course from the following to fulfill the Concept Course requirement:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JTC 311</td>
<td>History of Media</td>
<td>3</td>
</tr>
<tr>
<td>JTC 316</td>
<td>Multiculturalism and the Media</td>
<td></td>
</tr>
<tr>
<td>JTC 411</td>
<td>Media Ethics and Issues</td>
<td>4A,4B</td>
</tr>
</tbody>
</table>

---
Major in Journalism and Media Communication

JTC 412  International Mass Communication
JTC 413  New Communication Technologies and Society 4A,4B
JTC 414  Media Effects
JTC 415  Communications Law 4A,4B
JTC 418  Journalism, Peace, and War
JTC 419  Food and Natural Resources Communication
JTC 456/LB 456  Documentary Film as a Liberal Art
JTC 471  Research for Public Communicators
JTC 326  Online Storytelling and Audience Engagement 3

Individualized Focus Area and/or Second Field courses 15
Out-of-department courses 9

Total Credits 30

Senior

Select one of the following: 3
   JTC 411  Media Ethics and Issues 4A,4B
   JTC 415  Communications Law 4A,4B
   JTC 460  Senior Capstone 4C 3

Individualized Focus Area and/or Second Field courses 10
Out-of-department courses 14

Total Credits 30

Program Total Credits: 120

1 Of the 21 credits required for the Second Field, 12 must be upper-division (300- to 400-level) and none may be from JTC.
2 With approval of the department and advisor, students may substitute a 400-level Journalism and Media Communication study abroad course for 1 credit of the Internship/Practicum requirement and up to 3 credits of the Additional Credits requirement, for a maximum total of 4 credits for study abroad.
3 High-achieving students, with approval of advisor, may select JTC 544, Corporate and Institutional Media Production, to satisfy 3 credits of the Additional Credit requirement.
4 Select a minimum of 19 credits of Focus Area courses and 21 credits of Second Field courses over the sophomore, junior, and senior years, in consultation with advisor.
5 Select a three-credit statistics course offered by any department, with approval of advisor.
6 Select 3 credits other than JTC 300 from the list of courses in category 2 of the All-University Core Curriculum (AUCC).
7 Select 3 credits other than JTC 100 from the list of courses in category 3C of the AUCC. Students in this major must take 3 credits of Social and Behavioral Sciences other than JTC 100, which is required in the freshman year.
8 Of the 23 credits required for out-of-department courses in the junior and senior years, a minimum of 5 credits must be upper-division (300- to 400-level).
9 If either JTC 411 or JTC 415 was taken as a Concept Course in the junior year, students may take any different concept course here. High-achieving students, with approval of advisor, may select JTC 535 as an alternative here, providing they have completed or will complete the AUCC category 4B requirement with another course.
10 Students enrolled in the university prior to Fall 2011 may substitute JTC 420, JTC 440, JTC 450, JTC 465, or JTC 468 for their category 4C capstone course, in consultation with advisor.

Major Completion Map

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>College Composition (GT-C02)</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>JTC 100</td>
<td></td>
<td>Media in Society (GT-SS3)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>Elective</td>
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Total Credits 15
### Semester 2

<table>
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<tr>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>JTC 210</td>
<td>Newswriting</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
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</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
<td>X</td>
<td>1B</td>
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<tr>
<td>CO 150 must be completed by the end of Semester 2.</td>
<td>X</td>
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Total Credits: 15

### Sophomore

**Semester 3**

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JTC 211</td>
<td>Visual Communication</td>
<td>X</td>
<td>3</td>
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<tr>
<td>STAT 201</td>
<td>General Statistics</td>
<td></td>
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<tr>
<td>STAT ***</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Individualized Focus Area and/or Second Field courses (See List on Concentration Requirements Tab)</td>
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</table>

Total Credits: 15

**Semester 4**

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>Advanced Writing</td>
<td>2</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>Individualized Focus Area and/or Second Field courses (See List on Concentration Requirements Tab)</td>
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Total Credits: 15

### Junior

**Semester 5**

<table>
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<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>JTC 311</td>
<td>History of Media</td>
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<tr>
<td>JTC 316/ETST</td>
<td>Multiculturalism and the Media</td>
<td>316</td>
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<tr>
<td>JTC 411</td>
<td>Media Ethics and Issues</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>JTC 412</td>
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<tr>
<td>JTC 413</td>
<td>New Communication Technologies and Society</td>
<td>4A,4B</td>
<td></td>
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<td>Media Effects</td>
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<tr>
<td>JTC 415</td>
<td>Communications Law</td>
<td>4A,4B</td>
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<td>JTC 418</td>
<td>Journalism, Peace, and War</td>
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<td>JTC 456/ LB 456</td>
<td>Documentary Film as a Liberal Art</td>
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<td>JTC 471</td>
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<td></td>
</tr>
<tr>
<td>Out-of-Department Course</td>
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Total Credits: 15

**Semester 6**

<table>
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<tbody>
<tr>
<td>JTC 326</td>
<td>Online Storytelling and Audience Engagement</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Individualized Focus Area and/or Second Field courses (See List on Concentration Requirements Tab)</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out-of-Department Courses</td>
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<td></td>
<td>6</td>
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</table>

Total Credits: 15

### Senior

**Semester 7**

<table>
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<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JTC 326</td>
<td>Online Storytelling and Audience Engagement</td>
<td>X</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 15
Technical and Science Communication Minor

The minor in Technical and Science Communication is designed to educate highly qualified communicators who have interests in specialized academic disciplines and career fields. Because science and technology often involve complicated research and processes, communicating the results of that work requires special skills. This program is designed to prepare students for a wide range of niche career opportunities in media, corporate communication, technology related industries, and scientific environments.

Students in this minor will learn to write and manage communication efforts, with a focus on turning complex ideas and processes into simple, clear messages applicable for publication and electronic delivery via broadcast, cable, or the Web. The accuracy and effectiveness of this communication is especially important as the Internet and the ubiquity of mobile devices make the delivery and consumption of information widely available. Having the skills to interpret and communicate complicated processes provides significant career advantages in one of the highest-paying areas of professional communication.

Requirements

Effective Fall 2013

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JTC 210</td>
<td>Newswriting</td>
<td>3</td>
</tr>
<tr>
<td>JTC 211</td>
<td>Visual Communication</td>
<td>3</td>
</tr>
<tr>
<td>JTC 461</td>
<td>Writing About Science, Health, and Environment</td>
<td>3</td>
</tr>
<tr>
<td>JTC 464</td>
<td>Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>JTC 465</td>
<td>Specialized and Technical Editing</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 301</td>
<td>Advanced Scientific Writing–Chemistry (GT-CO3)</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one course from the following:

JTC 300 Professional and Technical Communication (GT-CO3)
JTC 326 Online Storytelling and Audience Engagement
JTC 341 TV News Writing, Reporting and Producing
JTC 342 Writing for Specialized Electronic Media
JTC 351 Publicity and Media Relations
JTC 361 Writing for Specialized Magazines
LB 300 Specialized Professional Writing

Total Credits 21
School of Music, Theatre, and Dance

Office in University Center for the Arts, Room 120
(970) 491-5529
music.colostate.edu (http://music.colostate.edu)
théatre.colostate.edu (http://théâtre.colostate.edu)
dance.colostate.edu (http://dance.colostate.edu)

Dr. Daniel Goble, Director, School of Music, Theatre, and Dance

Undergraduate
The School of Music, Theatre, and Dance at CSU provides a rigorous undergraduate educational experience.

The Music program is focused on the belief that music is both an artistic and intellectual achievement. We offer intense training in specialized music disciplines combined with a balance of core music courses in music history and theory. Most of all, our renowned and versatile faculty are committed to helping students discover their own unique identities through music. We offer B.M. degrees in music therapy, music education, music composition, and music performance as well as a B.A. in music degree. Additionally undergraduates can earn a performance-based music minor.

The Theatre program emphasizes a reciprocal relationship between practice and scholarly study, combining practical training with theory and history, while stressing creative critical thinking. Students are encouraged to engage intellectual and physical approaches to explore diverse cultural forms, historical traditions, and contemporary theatre practice. During their first two years as Theatre majors, all students will take the same core of courses in all sub-disciplines. Following their sophomore review, students will be directed into one of four concentrations offered to Theatre majors at CSU: Directing, Performance, Playwriting and Dramatic Literature, and Theatrical Design and Production.

The Dance program offers a rigorous program in classical and contemporary dance education culminating in a B.A. in Dance.

The degree requires a total of 120 credits with the following focus: technical training and foundations, performance, composition, pedagogy, professional preparation, theatrical production and design, and academics. In the Dance major, students explore the many possibilities for movement expression, along with creativity and scholarly examination, in a challenging and supportive environment.

Majors

• Major in Dance
• Major in Music (B.M.)
  • Composition Concentration
  • Music Education Concentration
    • Choral Option
    • Instrumental Option
  • Music Therapy Concentration
  • Performance Concentration
    • Jazz Studies Option
    • Orchestral Instrument Option
    • Organ Option
    • Piano Option
    • Piano Pedagogy Option
    • String Pedagogy Option
    • Voice Option
• Major in Music (B.A.)
• Major in Theatre
  • Design and Technology Concentration
  • Directing Concentration (No new students are being accepted into this concentration.)
  • General Theatre Concentration
  • Performance Concentration
  • Playwriting and Dramatic Literature Concentration (No new students are being accepted into this concentration.)

Minors

• Minor in Music

Graduate
The department offers graduate programs leading to the Master of Music (M.M.), with specializations in Music Therapy, Instrumental and Vocal performance, Choral Conducting, Instrumental Conducting, Music Education, Music Education with a Kodaly emphasis, and Music Education with Conducting emphasis.

Applicants to graduate programs in music must have a B.M., B.M.E., or equivalent bachelor’s degree. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the School of Music (http://music.colostate.edu).

Master Programs

• Master of Music, Choral Conducting Specialization
• Master of Music, Collaborative Piano Specialization
• Master of Music, Instrumental Conducting Specialization
• Master of Music, Music Education Specialization
• Master of Music, Music Education—Conducting Specialization
Courses

Subjects in this department include: Dance (D), Music (MU), Theatre (TH)

Dance (D)

D 110 Understanding Dance (GT-AH1) Credits: 3 (3-0-0)
Course Description: Broad examination of dance involving limited student participation in basic dance movements.
Prerequisite: None.
Registration Information: For non-dance majors. Previous dance experience not necessary.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

D 120A Dance Techniques I: Modern Credits: 2 (0-4-0)
Course Description: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121A Dance Techniques II: Modern Credits: 2 (0-4-0)
Course Description: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121B Dance Techniques II: Ballet Credits: 3 (0-6-0)
Course Description: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121C Dance Techniques II: Jazz Credits: 2 (0-4-0)
Course Description: Prerequisite: D 120C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 126 Dance Improvisation Credits: 2 (1-2-0)
Course Description: Organic movement and inventive dance movement through improvisational skills, body physicality, space/direction/level imagery and partnering.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 160 Musical Tap Forms Credits: 2 (0-4-0)
Course Description: Basic tap dance forms with emphasis on terminology, study of rhythm, and tap styles; historical development of tap in American culture.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220A Dance Techniques III: Modern Credits: 2 (0-4-0)
Course Description: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220B Dance Techniques III: Ballet Credits: 3 (0-6-0)
Course Description: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220C Dance Techniques III: Jazz Credits: 2 (0-4-0)
Course Description: Prerequisite: D 121C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 221A Dance Techniques IV: Modern Credits: 2 (0-4-0)
Course Description: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221B Dance Techniques IV: Ballet Credits: 3 (0-6-0)
Course Description: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221C Dance Techniques IV: Jazz Credits: 2 (0-4-0)
Course Description: Prerequisite: D 220C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
D 226 Dance Choreography I  Credits: 2 (1-2-0)
Course Description: Elements of dance composition including space, levels, rhythm, dynamics, qualities of movement, form, style.
Prerequisite: D 121A and D 121B and D 126.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 286 Practicum  Credits: Var[1-3] (0-0-0)
Course Description: Dance performance and production experience.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 320A Dance Techniques V: Modern  Credits: 3 (0-6-0)
Course Description: Theory and practice of modern dance techniques.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 320B Dance Techniques V: Ballet  Credits: 5 (0-10-0)
Course Description: Advanced ballet technique and performance.
Prerequisite: D 221B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 320C Dance Techniques V: Jazz  Credits: 2 (0-4-0)
Course Description: Classical jazz technique and performance.
Prerequisite: D 221C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321A Dance Techniques VI: Modern  Credits: 3 (0-6-0)
Course Description: Advanced modern dance techniques and performance.
Prerequisite: D 321A.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 321B Dance Techniques VI: Ballet  Credits: 5 (0-10-0)
Course Description: Advanced ballet technique and performance.
Prerequisite: D 321B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321C Dance Techniques VI: Jazz  Credits: 2 (0-4-0)
Course Description: Advanced jazz technique and performance.
Prerequisite: D 321C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 324 Teaching Creative Movement for Children  Credits: 2 (1-2-0)
Course Description: Theoretical and practical experience in teaching creative movement.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 326 Dance Choreography II  Credits: 3 (1-4-0)
Course Description: Advanced choreographic elements: group work, music influence, and nontraditional performance venues.
Prerequisite: D 226.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 330 Ballet Repertory Ensemble  Credits: 2 (0-4-0)
Course Description: Ballet repertoire performance for the stage.
Prerequisite: None.
Registration Information: Written consent of dance faculty.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 340 Contemporary Repertory Ensemble  Credits: 2 (0-4-0)
Course Description: Contemporary dance repertoire performance for the stage.
Prerequisite: None.
Registration Information: Written consent of instructor. Students must audition before given written consent by instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 420A Dance Techniques VII: Modern  Credits: 2 (0-4-0)
Course Description: Advanced modern dance techniques and performance.
Prerequisite: D 321A.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 420B Dance Techniques VII: Ballet  Credits: 2 (0-4-0)
Course Description: Advanced ballet technique and performance.
Prerequisite: D 321B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 420C Dance Techniques VII: Jazz  Credits: 2 (0-4-0)
Course Description: Advanced jazz technique and performance.
Prerequisite: D 321C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 421A Dance Techniques VIII: Modern  Credits: 2 (0-4-0)
Course Description: Advanced modern dance techniques and performance.
Prerequisite: D 420A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
D 421B Dance Techniques VIII: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 421C Dance Techniques VIII: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 424 Ballet Technique Pedagogy Credits: 3 (3-0-0)
Course Description: Theory and practice of ballet technique teaching methods.
Prerequisite: D 324.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 426 Dance Choreography III Credits: 2 (1-2-0)
Course Description: Studies in 20th-century dance composition forms.
Prerequisite: D 321A or D 321B or D 321C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 427 Dance History I Credits: 3 (3-0-0)
Course Description: History of classical ballet to modern times from its origins in folk dance of Middle Ages and social dance of Renaissance.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 428 Dance History II Credits: 3 (3-0-0)
Course Description: History and examination of modern and contemporary dance from United States foundation and diverse global influences.
Prerequisite: None.
Registration Information: Dance major; junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

D 432 Dance Therapy Credits: 3 (2-2-0)
Course Description: Use of dance forms in therapy for mentally and physically handicapped.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

D 434 Modern Technique Pedagogy Credits: 3 (2-3-0)
Course Description: Theory and practice of modern dance technique teaching methods.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 471 Dance Concert Credits: 3 (0-6-0)
Course Description: Demonstration of individual performance and choreographic proficiency in a public performance. Supporting paper and video demonstration required.
Prerequisite: D 326.
Registration Information: Written consent of faculty.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: D 324 or D 424 or D 434.
Registration Information: Written consent of instructor. Student must have taken the course they would be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Practicum in dance topics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 491 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 527 Contemporary Dance Credits: 2 (0-4-0)
Course Description: Techniques of dance movement and choreography.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
**Music (MU)**

**MU 100 Music Appreciation (GT-AH1)** Credits: 3 (3-0-0)

*Course Description:* Survey of music from a wide range of periods and styles.

*Prerequisite:* None.

*Registration Information:* Previous musical training not necessary.

*Terms Offered:* Fall, Spring, Summer.

*Grade Mode:* Traditional.

*Special Course Fee:* Yes.

*Additional Information:* Arts & Humanities 3B, Arts & Expression (GT-AH1).

**MU 111 Music Theory Fundamentals (GT-AH1)** Credits: 3 (3-0-0)

*Course Description:* Basic visual and aural fundamentals of music including intervals, scales, key and time signatures, chord construction, basic harmony, melodic writing.

*Prerequisite:* None.

*Registration Information:* For non-music majors and majors needing basic skills.

*Terms Offered:* Fall, Spring, Summer.

*Grade Mode:* Traditional.

*Special Course Fee:* Yes.

*Additional Information:* Arts & Humanities 3B, Arts & Expression (GT-AH1).

**MU 117 Music Theory I Credits: 4 (3-2-0)**

*Course Description:* Introduction to diatonic harmony and part-writing; basic sight singing, ear training, and keyboard harmony skills.

*Prerequisite:* None.

*Registration Information:* Must complete satisfactory completion of placement exam. Must register for lecture and laboratory.

*Term Offered:* Fall.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

**MU 118 Music Theory II Credits: 4 (3-2-0)**

*Course Description:* Four-part diatonic writing; diatonic modulation; diatonic sight singing, ear training, and keyboard harmony skills.

*Prerequisite:* None.

*Registration Information:* Must register for lecture and laboratory.

*Term Offered:* Spring.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

**MU 131 Introduction to Music History and Literature (GT-AH1) Credits: 3 (3-0-0)**

*Course Description:* Landmarks of music history and literature from 1300 to the present.

*Prerequisite:* None.

*Term Offered:* Fall, Spring.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

*Additional Information:* Arts & Humanities 3B, Arts & Expression (GT-AH1).

**MU 150 Piano Class I Credit: 1 (0-2-0)**

*Course Description:* Basic piano technique; keyboard harmony.

*Prerequisite:* None.

*Registration Information:* Required of all Bachelor of Music majors, except those in the piano or organ performance option. May test out if adequate keyboard skills.

*Terms Offered:* Fall, Spring, Summer.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

**MU 151 Piano Skills for Music Educators Credit: 1 (0-2-0)**

*Course Description:* Intermediate piano technique and appropriate sightreading skills for music educators.

*Prerequisite:* MU 150.

*Terms Offered:* Fall, Spring.

*Grade Mode:* S/U Sat/Unsat Only.

*Special Course Fee:* No.

**MU 152 Piano Skills for Choral Directors Credit: 1 (0-2-0)**

*Course Description:* Advanced piano skills necessary for choral directing and accompaniment.

*Prerequisite:* MU 151.

*Terms Offered:* Fall, Spring.

*Grade Mode:* S/U Sat/Unsat Only.

*Special Course Fee:* No.

**MU 153 Piano Skills for Music Therapists Credit: 1 (0-2-0)**

*Course Description:* Practical application of functional piano skills for clinical music therapists.

*Prerequisite:* None.

*Term Offered:* Fall.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

**MU 154 Jazz Piano Class Credit: 1 (0-2-0)**

*Course Description:* Basic jazz piano skills that serve as the foundation for a jazz pianist or composer.

*Prerequisite:* None.

*Term Offered:* Spring.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

**MU 155 Guitar Class I Credits: 2 (2-0-0)**

*Course Description:* Fundamental techniques for guitar emphasizing chord study and related literature.

*Prerequisite:* None.

*Terms Offered:* Fall, Spring, Summer.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

**MU 156 Guitar Class II Credits: 2 (2-0-0)**

*Course Description:* Fundamentals of guitar emphasizing solo literature and accompaniment.

*Prerequisite:* MU 155.

*Terms Offered:* Fall, Spring.

*Grade Mode:* Traditional.

*Special Course Fee:* No.

**MU 157 Voice Class I Credits: 2 (2-0-0)**

*Course Description:* Techniques of singing, emphasizing posture, breathing, tone production and diction, as applied to song literature.

*Prerequisite:* None.

*Terms Offered:* Fall, Spring.

*Grade Mode:* Traditional.

*Special Course Fee:* No.
MU 158  Voice Class II  Credits: 2 (2-0-0)
Course Description: Techniques of singing, emphasizing resonance, articulation, projection, and repertoire.
Prerequisite: MU 157.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 158A Freshman Voice Studio: English/Italian  Credits: 2 (1-2-0)
Course Description: Applied voice study and English/Italian diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 172A Freshman Voice Studio: German, French  Credits: 2 (1-2-0)
Course Description: Applied voice study and German/French diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 201 Men's Chorus  Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for men's voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 202 University Chorus  Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for mixed voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 204 Marching Band  Credit: 1 (0-5-0)
Course Description: Marching routines utilizing popular and jazz musical idioms with performances at all home football games and other athletic events.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 205 Concert Band  Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of basic concert band literature.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 206 Colorado State University Concert Orchestra  Credit: 1 (0-3-0)
Course Description: Performance opportunity for music majors and non music majors to perform standard orchestral literature.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 217 Music Theory III  Credits: 4 (3-2-0)
Course Description: Harmonic language of the 17th and 18th centuries; diatonic and chromatic sight singing, ear training, and keyboard harmony skills.
Prerequisite: MU 118.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 218 Music Theory IV  Credits: 4 (3-2-0)
Course Description: Late 18th and early 19th century harmonic and formal language; diatonic, chromatic, and modal sight singing, ear training, and keyboard harmony skills.
Prerequisite: MU 217.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 225 Jazz Theory  Credits: 2 (2-0-0)
Course Description: Music theory as it pertains to the jazz idiom; the aural language of jazz.
Prerequisite: MU 118.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 230 Music of Black Americans  Credits: 3 (3-0-0)
Course Description: Music indigenous to or composed by Black Americans.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 231 Women in Music  Credits: 3 (3-0-0)
Course Description: Examination of the role of women in music from historical and societal perspectives.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 241 Introduction to Music Therapy  Credits: 3 (3-0-0)
Course Description: Overview of music therapy, related helping professions, and problems in human functioning; emphasizes basic skills for managing behavior problems.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MU 250  Music Therapy Practice  Credits: 3 (2-2-0)
Course Description: Development of fundamental interactive and professional skills used in music therapy practice.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 251  Voice Techniques  Credit: 1 (0-2-0)
Course Description: Basic voice production, exercises, materials and methods for teaching, including child and adolescent voice concerns.
Prerequisite: None.
Registration Information: Instrumental music education majors only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 252A  Instrumental Techniques: Brass  Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for brass instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252B  Instrumental Techniques: Woodwinds  Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for woodwind instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252C  Instrumental Techniques: Strings  Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for string instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252D  Instrumental Techniques: Percussion  Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials, and teaching methods for percussion instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 254  Beginning Conducting  Credits: 2 (2-0-0)
Course Description: Basic conducting patterns and techniques.
Prerequisite: MU 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272A  Applied Music Instruction: Euphonium  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272B  Applied Music Instruction: French Horn  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272C  Applied Music Instruction: Trombone  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272D  Applied Music Instruction: Trumpet  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272E  Applied Music Instruction: Tuba  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272G  Applied Music Instruction: Harpsichord  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272H Applied Music Instruction: Organ  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272I Applied Music Instruction: Piano  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272J Applied Music Instruction: Percussion  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272K Applied Music Instruction: Guitar  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272L Applied Music Instruction: Harp  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272M Applied Music Instruction: String Bass  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272N Applied Music Instruction: Viola  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272O Applied Music Instruction: Violin  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272P Applied Music Instruction: Violoncello  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272Q Applied Music Instruction: Voice  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272R Applied Music Instruction: Bassoon  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272S Applied Music Instruction: Clarinet  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272T  Applied Music Instruction: Flute  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272U  Applied Music Instruction: Oboe  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272V  Applied Music Instruction: Saxophone (Alto)  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 273  Composition Instruction  Credits: Var[1-2] (0-0-0)
Course Description: 
Prerequisite: MU 118 and MU 131.
Registration Information: One or two half-hour lessons per week.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274A  Applied Jazz Instruction: Piano  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274B  Applied Jazz Instruction: String Bass  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274C  Applied Jazz Instruction: Trombone  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274D  Applied Jazz Instruction: Trumpet  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274E  Applied Jazz Instruction: Percussion  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274F  Applied Jazz Instruction: Saxophone  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274G  Applied Jazz Instruction: Guitar  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 276  Practicum-Introduction to Music Education  Credits: 3 (1-0-4)
Course Description: 
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 300 Women's Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for women's voices.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 302 University Orchestra Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of standard orchestral literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 304 Symphonic Band Credit: 1 (0-3-0)
Course Description: Preparation for public performance of full symphonic instrumentation of concert band literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 305 Colorado State University Concert Choir Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of choral literature emphasizing extended works with orchestral accompaniment.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 309 Jazz Ensemble Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of jazz ensemble literature of standard and experimental types.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 310 Jazz Combo Credit: 1 (0-2-0)
Course Description: Small group jazz performance practice and standard jazz repertoire.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 317 Music Theory V Credits: 2 (1-2-0)
Course Description: Late 19th and 20th century systems of composition and analysis; chromatic, modal, and atonal sight singing, ear training, and keyboard harmony skills.
Prerequisite: MU 218.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 318 Arranging and Orchestration Credits: 2 (2-0-0)
Course Description: Techniques for writing music for the standard orchestral and band instruments; basic arranging skills for various instrumental and choral ensembles.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 320 Jazz Improvisation Credit: 1 (0-2-0)
Course Description: Jazz improvisation skills through training in jazz theory, ear training, and improvisatory concepts.
Prerequisite: MU 225.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 325 Jazz Composition/Arranging Credits: 2 (2-0-0)
Course Description: Arranging jazz music for a variety of ensembles; composition of music in the jazz idiom.
Prerequisite: MU 225.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 330 Opera History and Literature Credits: 2 (2-0-0)
Course Description: Historical and musical development of opera from its roots through the 20th century.
Prerequisite: MU 131.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 342 Psychology of Music Credits: 3 (3-0-0)
Course Description: Psychological aspects of music: perception, psychoacoustics, aesthetics, musical function, communication, measurement, and affective responses.
Prerequisite: PSY 100.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 343 Research Methods in Music Therapy Credits: 3 (3-0-0)
Course Description: Techniques of observing, measuring, and recording behavior. Basic experimental methods and procedures used in music therapy research.
Prerequisite: STAT 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351A String Pedagogy I: Violin/Viola Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351B String Pedagogy I: Violoncello Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351C String Pedagogy I: String Bass Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352A String Pedagogy II: Violin/Viola Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351A.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352B String Pedagogy II: Violoncello Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351B.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352C String Pedagogy II: String Bass Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 355 Choral Conducting and Literature Credits: 2 (1-2-0)
Course Description: Basic techniques of choral conducting and analysis of selected works as an aid to interpretation.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 356 Instrumental Conducting and Literature Credits: 2 (1-2-0)
Course Description: Essentials of instrumental conducting and analysis of selected works.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365A Advanced Diction: Italian and English Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365B Advanced Diction: French and German Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 400 Colorado State University Chamber Choir Credit: 1 (0-5-0)
Course Description: Performance of chamber choral literature from all musical periods ranging from madrigals to music in a contemporary idiom.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 401 Opera Theater Credits: Var[1-2] (0-0-0)
Course Description: Performance of opera and/or operatic scenes emphasizing operatic singing and acting techniques.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 402 Theater/Chamber Orchestra Credit: 1 (0-5-0)
Course Description: Performance of selected operas, musicals, oratorio, orchestral accompaniments, and chamber music.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 404 Symphonic Wind Ensemble Credit: 1 (0-5-0)
Course Description: Performance of wind ensemble and band literature emphasizing most challenging of repertoire, using a select ensemble of performers.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 407 Accompanying Credit: 1 (0-3-0)
Course Description: Practical experience in the interpretation and execution of piano accompaniments.
Prerequisite: MU 272I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 408 Chamber Music Credit: 1 (0-3-0)
Course Description: Performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 415 Advanced Jazz Techniques Credits: 2 (1-2-0)
Course Description: Advanced jazz theory and rhythmic concepts, free improvisation and other modern performance techniques.
Prerequisite: MU 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 417 Counterpoint Credits: 3 (3-0-0)
Course Description: Contrapuntal techniques from the Middle Ages through the 20th century; development of compositional skills in counterpoint.
Prerequisite: MU 218.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 418 Advanced Orchestration Credits: 2 (2-0-0)
Course Description: Advanced writing for modern orchestra and related ensembles; advanced study of traditional and contemporary writing for the individual instruments.
Prerequisite: MU 318.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 419 Electronic Music Composition Credits: 2 (2-0-0)
Course Description: Fundamentals of electronic music composition, including hardware, software, digital audio, MIDI, and computer music.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 420 Marching Band Techniques Credits: 2 (2-0-0)
Course Description: Marching band conducting, design, and performance techniques.
Prerequisite: MU 204.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 421 Orchestral Techniques Credits: 2 (1-3-0)
Course Description: Orchestral conducting and rehearsal techniques.
Prerequisite: MU 252C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 425 Jazz Pedagogy Credits: 2 (2-0-0)
Course Description: Jazz ensemble, instrumentation, literature, performance practice and rehearsal techniques.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 430 20th Century Music Credits: 3 (3-0-0)
Course Description: Musical styles from 1900 to present; major 20th-century movements which reflect a changing society.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 431 American Music Credits: 3 (3-0-0)
Course Description: Sacred, patriotic, popular, and cultivated musical developments from the Pilgrims to 1900 including music on the Western frontier.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 432 Hymnology Credits: 2 (2-0-0)
Course Description: Hymns and congregational singing in the Christian tradition.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 433 Music and Rites of Christian Liturgy Credits: 2 (2-0-0)
Course Description: History of the music and rites of Christian liturgy from its beginnings to the present.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 434 Psalms in Music and Liturgy Credits: 2 (2-0-0)
Course Description: Musical traditions of the poetry and psalms of the Hebrew Bible, primarily from the perspective of Jewish and Christian liturgy.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
MU 435  Contemporary Liturgical Music in America  Credits: 2 (2-0-0)
Course Description: History and practice of contemporary liturgical music in America.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 437  History and Structure of the Organ  Credits: 2 (1-2-0)
Course Description: Physical structure, tonal disposition, acoustical surroundings, and historical development.
Prerequisite: MU 472H.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 440  Music Therapy Methods I  Credits: 3 (3-0-0)
Course Description: Basic characteristics of handicapped children encountered in the music classroom; methods and materials for educating them in music.
Prerequisite: MU 241.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 443  Music Therapy Methods II  Credits: 3 (3-0-0)
Course Description: Relation of music to health; current and future music therapy scenes; and emphasis on cognitive, affective, and psychomotor approaches to therapy.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 444  Music Therapy Methods III  Credits: 3 (3-0-0)
Course Description: Music therapy techniques: assessment, formulating objectives, designing and implementing programs, evaluation, problem solving, and creativity.
Prerequisite: BMS 300 and MU 241.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 445  Improvisation Techniques in Music Therapy  Credits: 2 (2-0-0)
Course Description: Music/movement improvisation techniques with clinical populations.
Prerequisite: None.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451A  String Pedagogy III: Violin  Credits: 2 (1-2-0)
Course Description: Prerequisite: MU 352A.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451B  String Pedagogy III: Violoncello  Credits: 2 (1-2-0)
Course Description: Prerequisite: MU 352B.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451C  String Pedagogy III: String Bass  Credits: 2 (1-2-0)
Course Description: Prerequisite: MU 352C.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 463  Chamber Music Literature  Credits: 2 (2-0-0)
Course Description: Chamber music literature from 1750 to present.
Prerequisite: MU 335.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 464A  String Literature: Violin/Viola  Credits: 2 (2-0-0)
Course Description: Prerequisite: MU 272N or MU 272O.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464B  String Literature: Violoncello  Credits: 2 (2-0-0)
Course Description: Prerequisite: MU 272P.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464C  String Literature: String Bass  Credits: 2 (2-0-0)
Course Description: Prerequisite: MU 272M.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 466  Song Literature  Credits: 2 (1-2-0)
Course Description: Development of song as an art form from monody to German Lieder, French school, and contemporary songs of England and America.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MU 467 Vocal Pedagogy Credits: 2 (2-0-0)
Course Description: Pedagogical foundations, techniques, resources, methods, and terminology for teaching singing.
Prerequisite: MU 265A and MU 265B.
Registration Information: Must have concurrent registration in MU 472Q.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 468 Organ Literature Credits: 2 (1-2-0)
Course Description: Survey of literature from earliest known works to present; stylistic content and interpretation.
Prerequisite: MU 437.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 469 Instrumental Literature Credits: 2 (1-2-0)
Course Description: Survey of literature for string, woodwind, and brass ensembles.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 471 Recital Credit: 1 (0-0-1)
Course Description: Demonstration of individual musical proficiency through public performance.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472A Applied Music Instruction: Euphonium Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272A.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472B Applied Music Instruction: French Horn Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272B.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472C Applied Music Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272C.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472D Applied Music Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272D.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472E Applied Music Instruction: Tuba Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272E.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472F Applied Music Instruction: Harpsichord Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272F.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272L.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472O Applied Music Instruction: Violin Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272O.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472N Applied Music Instruction: Viola Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272N.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472P Applied Music Instruction: Violoncello Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272P.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472Q Applied Music Instruction: Voice Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272Q.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472R Applied Music Instruction: Bassoon Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272R.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272S.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472L Applied Music Instruction: Harp Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272L.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472M Applied Music Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272M.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472J Applied Music Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272J.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472K Applied Music Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272K.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472I Applied Music Instruction: Piano Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272I.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272S.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472N Applied Music Instruction: Viola Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272N.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472O Applied Music Instruction: Violin Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272O.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472P Applied Music Instruction: Violoncello Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272P.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472Q Applied Music Instruction: Voice Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272Q.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472R Applied Music Instruction: Bassoon Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272R.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272S.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 472T Applied Music Instruction: Flute  
Credits: Var[1-2] (0-0-0)  
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.  
Prerequisite: MU 272T.  
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

MU 472U Applied Music Instruction: Oboe  
Credits: Var[1-2] (0-0-0)  
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.  
Prerequisite: MU 272U.  
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

MU 472V Applied Music Instruction: Saxophone (Alto)  
Credits: Var[1-2] (0-0-0)  
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.  
Prerequisite: MU 272V.  
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

MU 473 Composition Instruction  
Credits: Var[1-2] (0-0-0)  
Course Description: One or two-half hour lessons per week; emphasizing pedagogical methods.  
Prerequisite: MU 273.  
Registration Information: Must have successful completion of upper-division qualifying exam.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

MU 474 Applied Jazz Instruction  
Credits: Var[1-2] (0-0-0)  
Course Description: Private jazz instruction covering advanced aspects of jazz improvisation and performance.  
Prerequisite: MU 274A to 274G.  
Registration Information: MU 274 (any one subtopic); concurrent registration in any jazz ensemble; successful completion of upper division qualifying exam.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

MU 486A Practicum: Music Therapy  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Piano proficiency.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 486B Practicum: Music Education  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Admission to teacher licensure.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 487 Internship  
Credits: Var[1-18] (0-0-0)  
Course Description: Six-month field experience that students must complete to become eligible for registration and board certification.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.  

MU 495A Independent Study: Composition and Theory  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 495B Independent Study: Conducting  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 495C Independent Study: Improvisation  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 495D Independent Study: Music History  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 495E Independent Study: Music Literature  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 495F Independent Study: Music Therapy  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

MU 495G Independent Study: Pedagogy  
Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
MU 495H Independent Study: Performance Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

MU 496A Group Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496B Group Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496C Group Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496D Group Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496E Group Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496F Group Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496G Group Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496H Group Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

MU 496I Group Study: Performance Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Grade Mode: Instructor Option.

MU 498 Research in Music Therapy Credits: Var[1-3] (0-0-0)
Course Description: Participation of undergraduate music therapy majors in departmental research projects.
Prerequisite: MU 241 and MU 286.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 499 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Music majors only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 510 Foundations of Music Education Credits: 3 (3-0-0)
Course Description: Cultural, philosophical, psychological, and historical applications of music education.
Prerequisite: MU 630 or EDRM 600.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 517 Analytic Techniques I Credits: 2 (2-0-0)
Course Description: Appropriate analytic techniques for Middle Ages, Renaissance, and baroque music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 518 Analytic Techniques II Credits: 3 (3-0-0)
Course Description: Appropriate analytic techniques for classical, Romantic, and 20th-century music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 519 History of Music Theory Credits: 3 (3-0-0)
Course Description: Important authors, treatises, and texts dealing with acoustics, composition, counterpoint, harmony, notation, orchestration, thoroughbass, and tuning.
Prerequisite: MU 317.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 520 Elementary School Music Credits: 3 (3-0-0)
Course Description: Musical concepts and teaching strategies for grades K-6; contemporary influences on music education.
Prerequisite: EDUC 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MU 521  Junior and Senior High School Music  Credits: 3 (3-0-0)
Course Description: Music for grades 7-12. General music classes, choral and instrumental organizations, common problems, practices, and new concepts.
Prerequisite: EDUC 450.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 524  Dalcroze Eurhythmics. Level I  Credits: 3 (1-4-0)
Course Description: Musicianship, aesthetics, and pedagogy as studied through the body via movement and gesture.
Prerequisite: None.
Registration Information: Admission to the M.M. Music Education specialization.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 525A  Orff-Schulwerk Training Program: I  Credits: 3 (1-0-2)
Course Description: Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 525B  Orff-Schulwerk Training Program: II  Credits: 3 (1-0-2)
Course Description: Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 525C  Orff-Schulwerk Training Program: III  Credits: 3 (1-0-2)
Course Description: Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526A  Kodaly Training Program: Level I  Credits: 5 (2-2-2)
Course Description: Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526B  Kodaly Training Program: Level II  Credits: 5 (2-2-2)
Course Description: Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 526C  Kodaly Training Program: Level III  Credits: 5 (2-2-2)
Course Description: Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 527A  Conducting Seminar: Level I  Credits: 4 (0-0-4)
Course Description: Conducting score analysis, preparation and conducting problems; various conducting projects to sharpen skills and increase gestures.
Prerequisite: None.
Registration Information: Audition and acceptance into the graduate school. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527B  Conducting Seminar: Level 2  Credits: 4 (0-0-4)
Course Description: Furthers techniques learned in MU 527A; focuses on rehearsal techniques, performance practice, and asymmetrical meters.
Prerequisite: MU 527A.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527C  Conducting Seminar: Level 3  Credits: 4 (0-0-4)
Course Description: Furthers study from MU 527A-B. Recitative technique through both operatic and choral examples; final project is a group conducted Broadway musical.
Prerequisite: MU 527B.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 530  Music Through the Middle Ages  Credits: 3 (3-0-0)
Course Description: Music in Western civilization from its beginnings through Middle Ages.
Prerequisite: MU 334.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 531  Music of the Renaissance  Credits: 3 (3-0-0)
Course Description: Music of 15th and 16th centuries.
Prerequisite: MU 334.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 532  Music of the Baroque  Credits: 3 (3-0-0)
Course Description: Style and musical language of baroque from Gabrielli through Johann Sebastian Bach.
Prerequisite: MU 334.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MU 533 Music of the Classical Era  Credits: 3 (3-0-0)
**Course Description:** Vocal and instrumental music of middle and late 18th century.
**Prerequisite:** MU 335.
**Term Offered:** Spring (even years).
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 534 Music of the Romantic Era  Credits: 3 (3-0-0)
**Course Description:** Musical works, philosophies, and related arts of 19th century.
**Prerequisite:** MU 335.
**Registration Information:** Sections may be offered: Online.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 535 Contemporary Music  Credits: 3 (3-0-0)
**Course Description:** 20th-century music emphasizing stylistic and theoretical concepts.
**Prerequisite:** MU 430.
**Term Offered:** Spring (odd years).
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 536 Advanced Instrumental Conducting and Techniques  Credits: 3 (3-0-0)
**Course Description:** Score reading and analysis, preparation of instrumental scores for performance; expressive baton techniques, rehearsal methods and procedures.
**Prerequisite:** MU 356.
**Term Offered:** Spring.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 556 Collaborative Piano Literature  Credits: 3 (3-0-0)
**Course Description:** Literature and historical performance practices of collaborative piano music.
**Prerequisite:** None.
**Term Offered:** Fall (even years).
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 544 Advanced Techniques-Neurologic Music Therapy  Credits: 3 (3-0-0)
**Course Description:** Advanced neurologic music therapy techniques used with various clinical populations.
**Prerequisite:** BMS 300 and MU 241 and MU 250.
**Term Offered:** Spring.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 545 Composition for Music Therapy Practitioners  Credits: 3 (2-2-0)
**Course Description:** Music composition techniques for the music therapy clinician.
**Prerequisite:** None.
**Registration Information:** Must register for lecture and laboratory. Sections may be offered: Online.
**Terms Offered:** Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 546 Choral Literature-Renaissance and Baroque  Credits: 2 (2-0-0)
**Course Description:** Analytical and comparative survey of choral literature from Renaissance to 1750.
**Prerequisite:** MU 355.
**Terms Offered:** Fall, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 547 Choral Literature-1750 to Present  Credits: 2 (2-0-0)
**Course Description:** Analytical and comparative survey of choral literature from 1750 to present.
**Prerequisite:** MU 356.
**Terms Offered:** Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

MU 549 Symphonic Literature  Credits: 2 (1-2-0)
**Course Description:** Symphonic development from early classicism through impressionism; emphasis on formal structure, thematic sources, and social and historical influence.
**Prerequisite:** MU 469.
**Registration Information:** Must register for lecture and laboratory.
**Term Offered:** Fall.
**Grade Mode:** Traditional.
**Special Course Fee:** No.
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<th>Course Title</th>
<th>Credits</th>
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<td>MU 590D</td>
<td>Workshop: Humanities</td>
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<td>MU 590E</td>
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<td>MU 590G</td>
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<td>MU 590H</td>
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<td>MU 590I</td>
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<td>MU 590J</td>
<td>Workshop: Beginning Handbells</td>
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**MU 590K Workshop: Computers in Music Education**

Credits: Var[1-3] (0-0-0)

Course Description:

Prerequisite: None.

Term Offered: Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

**MU 590L Workshop: Advanced Handbells**

Credits: Var[1-3] (0-0-0)

Course Description:

Prerequisite: None.

Term Offered: Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

**MU 590N Workshop: Neurologic Music Therapy**

Credits: Var[1-3] (0-0-0)

Course Description:

Prerequisite: None.

Term Offered: Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

**MU 608 Graduate Chamber Music**

Credit: 1 (0-3-0)

Course Description: Graduate-level performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.

Prerequisite: None.

Restriction: Must be a: Graduate, Professional.

Registration Information: Graduate standing; audition required.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

**MU 630 Methods of Music Research**

Credits: 3 (3-0-0)

Course Description: Research, documentation, and bibliography for music history, literature, performance, theory, acoustics, music education, and quantitative testing.

Prerequisite: None.

Restriction: Must be a: Graduate, Professional.

Registration Information: Graduate standing.

Term Offered: Fall.

Grade Mode: Traditional.

Special Course Fee: No.

**MU 647 Historical Foundations of Music Therapy**

Credits: 3 (3-0-0)

Course Description: Historical foundations of music therapy in the United States from 1750 to the present.

Prerequisite: None.

Restriction: Must be a: Graduate, Professional.

Registration Information: Sections may be offered: Online.

Term Offered: Spring.

Grade Mode: Traditional.

Special Course Fee: No.

**MU 648 Neuroscience/Music Foundations in Therapy**

Credits: 3 (3-0-0)

Course Description: Historical and scientific foundations of neurologic music therapy.

Prerequisite: MU 544.

Restriction: Must be a: Graduate, Professional.

Registration Information: Sections may be offered: Online.

Term Offered: Spring.

Grade Mode: Traditional.

Special Course Fee: No.
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<th>Course Title</th>
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<td>literature for string, woodwind, and brass</td>
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MU 672M Applied Music Instruction: String Bass Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472M.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672N Applied Music Instruction: Viola Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472N.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672O Applied Music Instruction: Violin Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472O.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672P Applied Music Instruction: Violoncello Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472P.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672Q Applied Music Instruction: Voice Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472Q.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672R Applied Music Instruction: Bassoon Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472R.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672S Applied Music Instruction: Clarinet Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472S.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672T Applied Music Instruction: Flute Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472T.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672U Applied Music Instruction: Oboe Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472U.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672V Applied Music Instruction: Saxophone (Alto) Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472V.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 673 Composition Instruction Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week.
Prerequisite: MU 473.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 686 Music Therapy Practicum Credits: 3 (0-6-0)
Course Description: Clinical practicum for graduate music therapy students.
Prerequisite: MU 486A - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 692 Seminar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 695A Independent Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695B Independent Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695C Independent Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695D Independent Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695E Independent Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695F Independent Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695G Independent Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695H Independent Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696A Group Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696B Group Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696C Group Study Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696D Group Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696E Group Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696F Group Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696G Group Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696H Group Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 696I Group Study: Performance Credits: Var[1-3] (0-0-0)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 698 Research Credits: Var[1-3] (0-0-0)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Theatre (TH)

TH 141 Introduction to Theatre (GT-AH1) Credits: 3 (3-0-0)
Course Description: Theatre as an art and one of the humanities, its impact upon society, and its relationship to other art forms.
Prerequisite: None.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

TH 149 Movement for Actors I Credits: 2 (0-4-0)
Course Description: A broad survey of different movement theories from Asia, Africa, and Europe.
Prerequisite: TH 141 and TH 150, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 150 Introduction to Performance Credits: 3 (1-0-2)
Course Description: Imagination as the actor’s primary resource: acting exercises, compositions, improvisations to acquire the basic approach to text through action.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 151 Acting I Credits: 3 (2-2-0)
Course Description: Imagination as an actor’s resource. Finding action, objective, the art of memory, improvisation, scene study, from simple scenes in realistic plays.
Prerequisite: TH 150.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 153 Singing for Actors I Credits: 2 (0-0-2)
Course Description: Fusion of acting technique and singing technique for credible performance in the musical genre.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 160 Drawing for the Theatre Credits: 3 (1-4-0)
Course Description: Introduction to drawing, drafting, watercolor, and other graphic techniques used by set, costume, lighting, and media designers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 161 Technical Theatre: Stagecraft Credits: 3 (2-2-0)
Course Description: Skills and craft of technical theatre. Knowledge of tools, materials, and techniques essential to production realization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 163 Costume Construction for the Theatre Credits: 3 (1-4-0)
Course Description: Technical side of costuming for live stage performances with an emphasis on all aspects of construction.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 175 Storytelling Credits: 3 (2-0-2)
Course Description: Study and practice of storytelling.
Prerequisite: TH 141, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 186 Theatre Practicum I Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: None.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

TH 192 Theatre Freshman Seminar Credits: 3 (0-0-3)
Course Description: Collaborative creative processes required to transfer storytelling and self-scripting literature to theatrical performance with faculty artists/scholars.
Prerequisite: None.
Registration Information: Theatre majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
TH 240  Reading Shakespeare for the Theatre  Credits: 3 (3-0-0)
Course Description: Reading, speaking Shakespeare texts: comedies, sonnets, romances, to develop various approaches to understand and perform his work to modern audiences.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 241  Text Analysis for the Theatre  Credits: 3 (3-0-0)
Course Description: Analyzing plays with an aim toward being better prepared, as theatre artists, to understand the dramatic text, the basis of theatre art and craft.
Prerequisite: TH 150 or TH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 242  Theatre History I  Credits: 3 (3-0-0)
Course Description: Theatre from its origins through the Renaissance.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 243  Theatre History II  Credits: 3 (3-0-0)
Course Description: Theatre history from the English Restoration of 1660 through the postwar developments in Europe and the Americas from 1945 to 1960.
Prerequisite: TH 242.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 246  Movement for Actors II  Credits: 2 (0-4-0)
Course Description: Intermediate actor movement.
Prerequisite: TH 149 and TH 251, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 249  Movement for Actors II  Credits: 2 (0-4-0)
Course Description: Intermediate actor movement.
Prerequisite: TH 149 and TH 251, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 250  Voice and Movement for the Stage  Credits: 3 (2-2-0)
Course Description: A broad survey of traditional and topical approaches to voice and movement for the theatre actor.
Prerequisite: TH 251, may be taken concurrently.
Restriction: .
Registration Information: Theatre Majors only. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 251  Acting II  Credits: 3 (2-2-0)
Course Description: Application of the given circumstances to a text and development of characterization. Selection and preparation of audition material.
Prerequisite: TH 151.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 253  Singing for Actors II  Credits: 2 (0-0-2)
Course Description: Advanced singing techniques, sight singing, using more difficult and challenging music. Preparing for a performance in musical theatre.
Prerequisite: TH 153.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 255  Directing Workshop  Credits: 3 (2-2-0)
Course Description: Practical directing workshop, short directing exercises, short scenes, techniques, theories, readings, staging prompts.
Prerequisite: TH 151, may be taken concurrently and TH 241, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 260  Computer Assisted Drafting for Theatre  Credits: 3 (2-2-0)
Course Description: Computer-aided drafting and conceptual articulation for theatrical design and production using entertainment industry standard: Vectorworks.
Prerequisite: TH 161 and TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 261  Drawing and Drafting for the Theatre  Credits: 3 (1-4-0)
Course Description: Fundamental drawing, drafting, and rendering techniques needed by theatrical designers to effectively communicate their visual ideas.
Prerequisite: TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 262  Stage Management I  Credits: 3 (3-0-0)
Course Description: Duties and responsibilities of stage managers. Communication, rehearsal, performance techniques. Conceptual approaches to theatre.
Prerequisite: TH 150, may be taken concurrently and TH 160, may be taken concurrently and TH 175, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
TH 263  Costume Design I  Credits: 3 (1-4-0)
Course Description: Basic theory and technique for visualization of
theatrical characters through costume.
Prerequisite: TH 163.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 264  Lighting Design for the Theatre I  Credits: 3 (2-2-0)
Course Description: Essential principles and theory for stage lighting
including design process, control, equipment, and lighting aesthetics.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 265  Set Design I  Credits: 3 (3-0-0)
Course Description: Theory and techniques for designing scenery for the
stage.
Prerequisite: TH 160 and TH 161.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 266  Digital Media Design for Live Performance I  Credits: 3 (2-2-0)
Course Description: Sound and projection design fundamentals: control,
design and content creation for live performance settings.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 267  Scenic Painting  Credits: 3 (1-6-0)
Course Description: Basic techniques and practical applications in scenic
painting for the theatre.
Prerequisite: TH 265, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 269  Theatrical Makeup  Credits: 3 (2-3-0)
Course Description: Stage makeup. Individual skill in character analysis,
application in pigment, plastic, hair, makeup, and selection and use of
theatrical makeup.
Prerequisite: TH 160 or TH 263.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 275  Self-Scripting and Performance Workshop  Credits: 3 (1-0-2)
Course Description: Study and practice of the processes of self-scripting
(theatrical storytelling from personal experience) as a tool for performers
and writers.
Prerequisite: TH 175.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 286  Theatre Practicum II  Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 186.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 292  Design and Technology Seminar  Credit: 1 (0-0-1)
Course Description: Weekly examination of the ongoing production
processes and strategies for stage managers and designers assigned
productions in the mainstage season.
Prerequisite: TH 141, may be taken concurrently or TH 160, may be taken
concurrently.
Registration Information: May be taken up to six times for a maximum of
6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 301  Theatre Design and Production Special Topics  Credits: 3 (3-0-0)
Course Description: In-depth study of general interest in design and
production. Possible topics may include history of decor, storyboarding,
etc.
Prerequisite: TH 260.
Registration Information: Choose any two of the following: TH 262,
TH 263, TH 264, TH 265, or TH 266.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 324  Teaching Creative Drama for Children  Credits: 3 (1-6-0)
Course Description: Theoretical and practical experience in teaching
creative drama.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Required field trips
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 341  History of Theatre in Performance  Credits: 3 (3-0-0)
Course Description: Theatre in performance from its origins through the
modern era.
Prerequisite: TH 141 and TH 241.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 343  Contemporary Plays and Alternative Theatre  Credits: 3 (3-0-0)
Course Description: The study of revolutionary movements and
alternative staging practices in theatre prompted by plays written from
1960 to the present.
Prerequisite: TH 243.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
TH 344 Dramaturgy Protocol Seminar  Credits: 3 (0-0-3)
Course Description: Training in the application of dramaturgical techniques to facilitate the collaborative creative process in contemporary performance practice.
Prerequisite: TH 343.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 349 Movement for Actors III  Credits: 2 (0-4-0)
Course Description: Advanced assimilation techniques to challenge the actor physically and psychologically to conceptualize and fully realize theatrical characterization.
Prerequisite: TH 251.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 350 Classical Text  Credits: 3 (3-0-0)
Course Description: The Cicely Berry approach to voice and speech for speaking classical text.
Prerequisite: TH 251, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 351 Acting III  Credits: 3 (1-2-1)
Course Description: Acting Methods for challenges presented in plays by Brecht, Moliere, Chekov, Ibsen, Pirandello, O'Neill, and contemporary re-workings of the Greeks.
Prerequisite: TH 251.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 352 Acting for Singers  Credits: 2 (1-0-1)
Course Description: Acting class specifically for singers: improv, beginning scene work, harnessing given circumstance and augmenting physical character life onstage.
Prerequisite: MU 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 353 Experimental Performance  Credits: 3 (2-2-0)
Course Description: Artistic exploration of experimental performance via radical innovations in dance, theatre, music, literature, film, art, and performance art.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 354 Directing Seminar  Credits: 3 (0-0-3)
Course Description: Theatrical, practical, and creative approaches to directing a play: research, analysis, semiotics, identifying visual metaphor, point of view.
Prerequisite: TH 255 and TH 265, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 355 Stage Management II  Credits: 3 (1-4-0)
Course Description: Advanced training and techniques in stage management and technical production for the theatre.
Prerequisite: TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 361 Technical Theatre: Technical Direction  Credits: 3 (1-4-0)
Course Description: Advanced training and techniques in construction management and technical production for the theatre.
Prerequisite: TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 364 Lighting Design for the Theatre II  Credits: 3 (2-2-0)
Course Description: Principles and theory for stage lighting including advanced programming, tour preparation, and presentation techniques.
Prerequisite: TH 264.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 366 Digital Media Design for Live Performance II  Credits: 3 (2-2-0)
Course Description: Advanced sound and projection design techniques (including sound control, microphone arrays, animation and mapping) in live performance settings.
Prerequisite: TH 264 and TH 266.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 367 Stage Management III  Credits: 3 (1-4-0)
Course Description: Problem-solving in the stage management leadership role: advanced study in production realization, stage management concepts and techniques in practice.
Prerequisite: TH 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 369 Advanced Makeup and Hair Design  Credits: 3 (1-4-0)
Course Description: Theory and practice of advanced costume design techniques.
Prerequisite: TH 263.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 371 Technical Theatre: Technical Direction  Credits: 3 (1-4-0)
Course Description: Advanced training and techniques in construction management and technical production for the theatre.
Prerequisite: TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 372 Stage Management II  Credits: 3 (1-4-0)
Course Description: Advanced training and techniques in stage management and technical production for the theatre.
Prerequisite: TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 375 Acting for Singers  Credits: 2 (1-0-1)
Course Description: Acting class specifically for singers: improv, beginning scene work, harnessing given circumstance and augmenting physical character life onstage.
Prerequisite: MU 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 376 Advanced Scenic Design  Credits: 3 (2-2-0)
Course Description: The practice of scenic design from text to idea to realized work. Advanced scenic design techniques in divergent and increasingly complex situations.
Prerequisite: TH 267, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 377 Digital Media Design for Live Performance II  Credits: 3 (2-2-0)
Course Description: Advanced sound and projection design techniques (including sound control, microphone arrays, animation and mapping) in live performance settings.
Prerequisite: TH 264 and TH 266.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 379 Advanced Makeup and Hair Design  Credits: 3 (1-4-0)
Course Description: Advanced techniques in makeup, hair, and wig design for theatre.
Prerequisite: TH 269.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
TH 370A Theatre Assistant: Design Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty designer in full production locally or off-site.
Prerequisite: TH 286.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 370B Theatre Assistant: Directing Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty director in full production locally or off-site.
Prerequisite: TH 355.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 375 Playwright's Workshop Credits: 3 (1-0-2)
Course Description: Character, conflict, structure, setting, dialogue, and the process of rewriting, resulting in a finished 10-minute play.
Prerequisite: TH 241 and TH 343.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: None.
Registration Information: Junior standing; written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 386 Theatre Practicum III Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 286.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 392 Theatre Seminar Credits: 3 (0-0-3)
Course Description: Various current theatre topics taught by visiting professionals, for example, "The League of Regional Theatres is our National Theatre."
Prerequisite: TH 243, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 400 Theatre Production Workshop Credits: Var[1-3] (0-0-0)
Course Description: Explores both the practical and dramaturgical essences of the production of a play.
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits of TH 400 allowed to be counted toward the major. May not be taken concurrently with TH 471. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 401 Theatrical Design and Prod Advanced Topics Credits: 3 (2-2-0)
Course Description: Intensive study for advanced TD&P students, e.g., property design, advanced costume technology, wigmaking, company management, rigging, pyro, etc.
Prerequisite: (TH 160) and (TH 362), may be taken concurrently or TH 363, may be taken concurrently or TH 364, may be taken concurrently or TH 365, may be taken concurrently or TH 366, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 449 Commedia and Masks Credits: 3 (0-0-3)
Course Description: Playing comedy, including commedia del'arte techniques, clown work, masks, circus techniques, mime, and scene work from comic scripts.
Prerequisite: TH 351, may be taken concurrently or TH 355, may be taken concurrently or TH 375, may be taken concurrently.
Restriction: .
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 450 Professional Actor Preparation Credits: 3 (2-2-0)
Course Description: Portfolios, casting, breakdowns, reels, agents, managers, interviews, cold reading techniques, on-camera work, marketing.
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 451 Advanced Topics in Acting Credits: 3 (2-2-0)
Course Description: Author-specific actor challenges (e.g. Brecht, Beckett, Shakespeare, Chekhov, Moliere, and contemporary writers).
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory. May be taken three times for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 455 Advanced Directing Credits: 4 (2-2-0)
Course Description: Intensive practical experience in stage direction, focusing on specific directional challenges posed by various types of texts and multiple collaborative projects.
Prerequisite: TH 344, may be taken concurrently or TH 350, may be taken concurrently or TH 355.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 460 Design Portfolio and Professional Preparation Credits: 3 (2-2-0)
Course Description: Creating effective portfolio and design presentation; digital portfolios, storyboarding, articulating concepts, professional preparation for career.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
TH 471 Capstone in Theatre Practice Credits: 3 (0-0-3)
Course Description: Major production assignment in acting, design, production, or dramatic literature.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 475 Advanced Playwriting Credits: 3 (2-0-1)
Course Description: Development of imaginative capabilities and insights, to articulate an individual voice as a writer of longer and more complex plays for theatre.
Prerequisite: TH 344 and TH 375.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 478 Theatre in London Seminar Credits: 3 (0-0-3)
Course Description: Seminar to prepare for study in London for theatre research as an evolving art form rich in historical and artistic traditions.
Prerequisite: TH 141.
Registration Information: Must have concurrent registration in TH 479.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 479 Theatre in London: Travel Abroad Credits: 3 (0-0-3)
Course Description: To foster theatre research as an evolving art form rich in historical and artistic traditions. Students will attend 13-15 live theatre productions.
Prerequisite: TH 141.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 482 Theatre in London--Travel Abroad Credits: 3 (0-0-3)
Course Description: Study abroad in and around London to foster research into theatre as an evolving art form with rich historical and artistic traditions.
Prerequisite: None.
Registration Information: Must be in good academic and disciplinary standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: TH 384.
Registration Information: Written consent of instructor; students must have taken the course with which they will be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 486 Theatre Practicum IV Credits: 2 (0-10-0)
Course Description: Advanced topics in applied theatre production. Challenges in developing and mounting a theatrical performance.
Prerequisite: TH 386.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 487 Theatre Internship Credits: Var[1-12] (0-0-0)
Course Description: Advisor-approved position at a professional regional theatre, a professional training program, or professional summer theatre.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 491 Repertory Theatre Workshop Credits: Var[1-18] (0-0-0)
Course Description: Principles and practice of repertory theatre operation; practical experience offered.
Prerequisite: None.
Registration Information: Audition only.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 492 Theatre Seminar Credits: 3 (0-0-3)
Course Description: Contemporary theatre practice, trends, in-depth study of genres, authors, current theatre research, e.g., “Theatre of Revolt”, “Beckett’s Theatre”.
Prerequisite: TH 343.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 498 Theatre Research Credits: Var[3-6] (0-0-0)
Course Description: Scholarly research paper in theatre. Topic approved by faculty advisor.
Prerequisite: None.
Registration Information: Theatre majors only. Written consent of faculty advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 499 Theatre Thesis Credits: Var[3-6] (0-0-0)
Course Description: Written thesis in theatre. Topic approved by faculty advisor.
Prerequisite: None.
Registration Information: Written consent of faculty advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Dance

Office in University Center for the Arts, Room 120
(970) 491-5529
dance.colostate.edu (http://dance.colostate.edu)
Professor Jane Slusarski-Harris, Director

CSU offers a rigorous program in classical and contemporary dance education culminating in a B.A. in Dance. The degree requires a total of 120 credits with the following focus: technical training and foundations, performance, composition, pedagogy, professional preparation, theatrical production and design, and academics. In the Dance major, students explore the many possibilities for movement expression, along with creativity and scholarly examination, in a challenging and supportive environment. Dance major and scholarship auditions for prospective students (high school seniors or transfers) are held during Fall and Spring Visit Days. The audition assesses training background, technical level, and the potential to successfully complete the degree program at an advanced and/or pre professional level. To be placed into the Dance major, students should have professional quality dance training in both ballet and modern technique, be at the intermediate technical level, and have the ability to withstand rigorous daily work throughout the year. Other forms of previous dance training are applicable and highly encouraged. For non-majors, enrollment in dance major technique classes depends on space availability, technical level, and suitability, and takes place during the classes of the first week of the semester. All technique classes are accompanied by accomplished musicians in piano, percussion, and a variety of other instruments. Performance, choreographic, and production opportunities take place each semester and students are encouraged to collaborate with other majors in music, theatre, and the visual arts. Visiting guest artists teach master classes and workshops and choreograph for the students on a regular basis. Supervised student teaching experiences are offered with different age groups and in a variety of situations.

Upon graduation, students will have a theoretical and practical foundation in dance. Graduates will achieve an intermediate/advanced level of proficiency in modern and ballet technique and be able to apply this knowledge to the areas of professional performance, choreography, and teaching. They will have a foundation in technical production and design which supports dance and theatrical productions. They will have a working knowledge of anatomy, kinesiology, and various movement theories relating to dance techniques. They will have a solid knowledge and appreciation of the history and philosophy of dance from many cultures and time periods.

**Potential Occupations**

Dance careers are rigorous and demanding, requiring years of training and discipline. Dance professionals must be versatile with a broad base of experiences in dance or related fields. Dance majors often select a second major such as music, theatre, business, occupational therapy, technical journalism, or exercise and sport science to enhance their job prospects. Experience acquired through extracurricular performances or internships is highly recommended to enhance practical training, development, and career opportunities. Students are encouraged to go on for advanced study at the graduate level in dance in order to secure teaching positions in higher education.

Some examples of the career opportunities in dance include, but are not limited to: professional dancer, professional choreographer, artistic director, university/college faculty, studio owner and faculty, conservatory or school faculty, dance critic, dance therapist, dance somatics specialist, arts manager, lighting designer, costume designer, sound designer, theatre technician, production crew, producer, fashion coordinator, special events coordinator, makeup artist, musical theatre director.

**Requirements**

### Effective Fall 2015

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CO 150</td>
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<tr>
<td>D 126</td>
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<td>D 226</td>
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<td>2</td>
</tr>
<tr>
<td>D 286</td>
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<td>2</td>
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<tr>
<td>Dance Repertory (see list below)</td>
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</tr>
<tr>
<td>Dance Techniques A and B (see list below)</td>
<td></td>
<td>10-16</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<tr>
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<td><strong>Total Credits</strong></td>
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#### Sophomore

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<td>D 324</td>
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<tr>
<td>D 326</td>
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<tr>
<td>Dance Repertory (see list below)</td>
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<td>0-4</td>
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<tr>
<td>Dance Techniques A and B (see list below)</td>
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<td>10-16</td>
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<tr>
<td>Select one from the following:</td>
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<tr>
<td>TH 163</td>
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<tr>
<td>TH 262</td>
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<td>TH 263</td>
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<tr>
<td>TH 264</td>
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</tbody>
</table>
TH 266  Digital Media Design for Live Performance I
Advanced Writing  2  3
Biological and Physical Sciences  3A  4
Total Credits  28-32

Junior

D 427  Dance History I  4A  3
D 486  Practicum  1
Dance Repertory (see list below)  0-4
Dance Techniques A and B (see list below)  11-16
Dance Electives (see list below)  2
Arts and Humanities  3B  3
Historical Perspectives  3D  3
Social and Behavioral Sciences  3C  3
Total Credits  28-32

Senior

D 424  Ballet Technique Pedagogy  3
D 428  Dance History II  4A  3
D 434  Modern Technique Pedagogy  3
D 471  Dance Concert  4B,4C  3
Dance Repertory (see list below)  4
Dance Electives (see list below)  6
Select one of the following courses not taken previously:  3
TH 163  Costume Construction for the Theatre  
TH 262  Stage Management I  
TH 263  Costume Design I  
TH 264  Lighting Design for the Theatre I  
TH 266  Digital Media Design for Live Performance I  
Global and Cultural Awareness  3E  3
Total Credits  28
Program Total Credits:  120

Dance Techniques A and B - Required Courses

- Students are required to audition for both modern and ballet dance technique courses and will be placed in the appropriate levels of technique courses.
- Students must take a minimum of 42 credits of dance technique, to include:
  - a minimum of six semesters of modern, and
  - a minimum of five semesters of ballet.
- Dance technique courses may be repeated for credit.
- At least one dance technique course must be taken during the last three semesters either as a requirement or as an elective.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>D 121A</td>
<td>Dance Techniques II: Modern</td>
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<tr>
<td>D 220A</td>
<td>Dance Techniques III: Modern</td>
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<tr>
<td>D 221A</td>
<td>Dance Techniques IV: Modern</td>
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<td>D 320A</td>
<td>Dance Techniques V: Modern</td>
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<tr>
<td>D 321A</td>
<td>Dance Techniques VI: Modern</td>
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<td>D 121B</td>
<td>Dance Techniques II: Ballet</td>
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<tr>
<td>D 220B</td>
<td>Dance Techniques III: Ballet</td>
<td>3</td>
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</table>

Select from among the following courses with approval of advisor and written consent of instructors:
D 221B  
Dance Techniques IV: Ballet  
3

D 320B  
Dance Techniques V: Ballet  
5

D 321B  
Dance Techniques VI: Ballet  
5

**Dance Repertory Courses**

Students must take a minimum of 6 credits of dance repertory courses and may repeat the courses up to nine times.

<table>
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<tr>
<td>D 330</td>
<td>Ballet Repertory Ensemble</td>
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<td>D 340</td>
<td>Contemporary Repertory Ensemble</td>
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</table>

**Dance Electives**

Students must take a minimum of 8 credits of dance elective courses, after having completed the dance technique required courses and the dance repertory courses.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 330</td>
<td>Ballet Repertory Ensemble</td>
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<tr>
<td>D 340</td>
<td>Contemporary Repertory Ensemble</td>
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<td>D 420A</td>
<td>Dance Techniques VII: Modern</td>
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<td>D 420B</td>
<td>Dance Techniques VII: Ballet</td>
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<tr>
<td>D 421A</td>
<td>Dance Techniques VIII: Modern</td>
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<td>D 421B</td>
<td>Dance Techniques VIII: Ballet</td>
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**Major Completion Map**

**Freshman**

**Semester 1**

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<td>Dance Improvisation</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>Dance Techniques A and B (See Department List on Program Requirements Tab)</td>
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**Total Credits**

16

**Semester 2**

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<th>Credits</th>
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<tr>
<td>D 226</td>
<td>Dance Choreography I</td>
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<td>D 286</td>
<td>Practicum</td>
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<td>Dance Repertory (See Department List on Program Requirements Tab)</td>
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**Total Credits**

16

**Sophomore**

**Semester 3**

Select one course from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>TH 163</td>
<td>Costume Construction for the Theatre</td>
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<td>TH 262</td>
<td>Stage Management I</td>
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<td>TH 263</td>
<td>Costume Design I</td>
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<td>TH 264</td>
<td>Lighting Design for the Theatre I</td>
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<tr>
<td>TH 266</td>
<td>Digital Media Design for Live Performance I</td>
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</table>

Biological and Physical Sciences |                              |          |             | 3A   | 4       |

Dance Repertory (See Department List on Program Requirements Tab) |                              | X        |             |      | 0-2     |
Dance Techniques A and B (See Department List on Program Requirements Tab) X 7-10

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<th>Semester 4</th>
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<td>D 326 Dance Choreography II</td>
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<td>Dance Repertory (See Department List on Program Requirements Tab)</td>
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Total Credits 14-15

Junior

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<td>Historical Perspectives</td>
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<td>Social and Behavioral Sciences</td>
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<td>Dance Repertory (See Department List on Program Requirements Tab)</td>
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Total Credits 15

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<tr>
<td>D 427 Dance History I</td>
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<td>D 486 Practicum</td>
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Total Credits 13-17

Senior

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<td>D 424 Ballet Technique Pedagogy</td>
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<tr>
<td>TH 163 Costume Construction for the Theatre</td>
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<td>TH 262 Stage Management I</td>
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<td>TH 263 Costume Design I</td>
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<td>TH 264 Lighting Design for the Theatre I</td>
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<td>TH 266 Digital Media Design for Live Performance I</td>
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Total Credits 14

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<td>D 471 Dance Concert</td>
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<td>Global and Cultural Awareness</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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Total Credits 14

Program Total Credits: 120
Major in Music (B.M.)

Our primary goal is to prepare students to become highly skilled music educators, music therapists, performers, composers, and conductors. Program goals encourage and develop high standards of teaching, scholarship, performance, and research in music. We are pleased to offer small academic classes, applied study with highly qualified faculty, and careful attention to advising. Courses in music appreciation, music theory fundamentals, and ensembles are open to all students regardless of major.

A successful audition is required prior to entrance into any B.M. Music degree program.

Learning Outcomes

Students will demonstrate:

- Ability to perform music from a variety of historical/style periods, and exhibit the appropriate skills for musical self-expression in juried performances. These skills include: techniques, musicianship, tone, diction/articulation, style, interpretation, and artistry.
- Understanding of the common elements and organizational patterns of music, including musical forms, processes, and structures.
- Knowledge of music history and representative composers and works from each on a defined evaluation instrument.

Students are also expected to learn music literature from all periods through aural and score analysis. Performance skills are tested at the end of the sophomore year and in a graduation recital if required by the degree option. Some programs require satisfactory completion of supervised student teaching, an internship, or a senior project. In addition, all students must pass a piano proficiency examination.

Potential Occupations

The undergraduate music curricula at CSU can lead to personally fulfilling careers as music educators, music therapists, performers, composers, and conductors. Music graduates from CSU have successfully gained employment in public and private schools, hospitals and institutions, and as professional performers, conductors, and composers.

Concentrations and Options

- Composition Concentration
- Music Education Concentration
  - Choral Option
  - Instrumental Option
- Music Therapy Concentration
- Performance Concentration
  - Jazz Studies Option
  - Orchestral Instrument Option
  - Organ Option
  - Piano Option
  - Piano Pedagogy Option
  - String Pedagogy Option
  - Voice Option

Major in Music (B.M.), Composition Concentration

The Composition concentration is designed to prepare the student to compose original music for a wide variety of venues including live concerts, music to accompany film, video, dance, and theatre. Course work emphasizes comprehensive musicianship throughout the curriculum with particular emphasis on individualized study in music composition.

Requirements

Effective Fall 2016

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Composition Concentration.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<td>MU 117</td>
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<td>MU 118</td>
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<td>MU 131</td>
<td>3B</td>
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Select one group from the following:

Group A:
- MU 172A  Freshman Voice Studio: English/Italian
- MU 172B  Freshman Voice Studio: German, French

Group B:
- Applied Music Instruction - Lower-Division (see list below)

Ensemble (see list below)

Historical Perspectives
- 3D

Mathematics
- 1B
Sophomore

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MU 217</td>
<td>Music Theory III</td>
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<tr>
<td>MU 218</td>
<td>Music Theory IV</td>
<td>4</td>
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<tr>
<td>Applied Music Instruction - Lower-Division</td>
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<tr>
<td>MU 273</td>
<td>Composition Instruction</td>
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<td>Ensemble (see list below)</td>
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<td>PSY 100</td>
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<td>Advanced Writing</td>
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Total Credits: 30

Junior

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<tr>
<td>MU 254</td>
<td>Beginning Conducting</td>
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<tr>
<td>MU 317</td>
<td>Music Theory V</td>
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<tr>
<td>MU 318</td>
<td>Arranging and Orchestration</td>
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<tr>
<td>MU 334</td>
<td>Music History I</td>
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<td>Music History II</td>
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<td>MU 355</td>
<td>Choral Conducting and Literature</td>
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<td>MU 356</td>
<td>Instrumental Conducting and Literature</td>
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<tr>
<td>MU 473</td>
<td>Composition Instruction</td>
<td>4</td>
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<td>MU 499</td>
<td>Thesis</td>
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<td>Ensemble (see list below)</td>
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<td>Arts and Humanities</td>
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Total Credits: 31

Senior

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<tr>
<td>MU 417</td>
<td>Counterpoint</td>
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<td>MU 418</td>
<td>Advanced Orchestration</td>
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<td>MU 419</td>
<td>Electronic Music Composition</td>
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<td>MU 471</td>
<td>Recital</td>
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<td>Ensemble (see list below)</td>
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<td>Biological and Physical Sciences</td>
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<td>Global and Cultural Awareness</td>
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Total Credits: 29

Program Total Credits: 120

Applied Music Instruction - Lower-Division

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<tr>
<td>MU 272A</td>
<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
<td>1-2</td>
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<tr>
<td>MU 272G</td>
<td>Applied Music Instruction: Harpsichord</td>
<td>1-2</td>
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</tbody>
</table>
MU 272H  Applied Music Instruction: Organ  1-2
MU 272I  Applied Music Instruction: Piano  1-2
MU 272J  Applied Music Instruction: Percussion  1-2
MU 272K  Applied Music Instruction: Guitar  1-2
MU 272L  Applied Music Instruction: Harp  1-2
MU 272M  Applied Music Instruction: String Bass  1-2
MU 272N  Applied Music Instruction: Viola  1-2
MU 272O  Applied Music Instruction: Violin  1-2
MU 272P  Applied Music Instruction: Violoncello  1-2
MU 272Q  Applied Music Instruction: Voice  1-2
MU 272R  Applied Music Instruction: Bassoon  1-2
MU 272S  Applied Music Instruction: Clarinet  1-2
MU 272T  Applied Music Instruction: Flute  1-2
MU 272U  Applied Music Instruction: Oboe  1-2
MU 272V  Applied Music Instruction: Saxophone (Alto)  1-2

**Ensemble Courses**

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<td>MU 201</td>
<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
<td>1</td>
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<tr>
<td>MU 302</td>
<td>University Orchestra</td>
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<tr>
<td>MU 304</td>
<td>Symphonic Band</td>
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<tr>
<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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<tr>
<td>MU 309</td>
<td>Jazz Ensemble</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<tr>
<td>MU 401</td>
<td>Opera Theater</td>
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<tr>
<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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<td>MU 404</td>
<td>Symphonic Wind Ensemble</td>
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<tr>
<td>MU 407</td>
<td>Accompanying</td>
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<tr>
<td>MU 408</td>
<td>Chamber Music</td>
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</table>

1. Students with previous keyboard experience may test out of MU 150 and replace with one elective credit.
2. First-year voice students take MU 172A and MU 172B, then MU 272Q the second year for 2 semesters. Instrumentalists take MU 272A-MU 272P or MU 272R-MU 272V on a major instrument for 2 semesters each of the first 2 years.
3. Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B or MU 272A-MU 272V. An additional four credits of ensembles are to be completed in semesters of the student’s choosing for a total of eight credits. At least one semester during the program of study, this must be achieved by taking MU 408 or another small ensemble.
4. Voice students take three credits of electives. Instrumentalists take five credits of electives.
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

A grade of C or better is required in all music courses used to satisfy the requirements of the BM in Music, Composition Concentration.
To Declare this Major: Audition with department.

Freshman

<table>
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<td>MU 131</td>
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<td>MU 150 Piano Class I</td>
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<td>MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Ensemble (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Historical Perspectives</td>
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Total Credits: 15

Semester 2

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<tr>
<td>CO 150 College Composition (GT-CO2)</td>
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<tr>
<td>MU 118 Music Theory II</td>
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<td>Select one course from the following:</td>
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<tr>
<td>MU 172B Freshman Voice Studio: German, French</td>
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<td>MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Ensemble (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Mathematics</td>
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Total Credits: 15

Sophomore

Semester 3

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<td>MU 273 Composition Instruction</td>
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<td>Ensemble (See List on Concentration Requirements Tab)</td>
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<td>Advanced Writing</td>
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Total Credits: 16

Semester 4

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<tr>
<td>MU 273 Composition Instruction</td>
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<td>Ensemble (See List on Concentration Requirements Tab)</td>
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<tr>
<td>PSY 100 General Psychology (GT-SS3)</td>
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Total Credits: 15

Junior

Semester 5

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<td>MU 317 Music Theory V</td>
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<tr>
<td>MU 334 Music History I</td>
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<td>MU 473 Composition Instruction</td>
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<td>MU 499 Thesis</td>
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### Music Electives

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<td>MU 356</td>
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<td>MU 473</td>
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<td>Arts and Humanities</td>
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**Total Credits:** 14

### Senior

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**Total Credits:** 15

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<tr>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Total Credits:** 16

**Program Total Credits:** 120

---

**Major in Music (B.M.), Music Education Concentration**

The Music Education program at CSU is one of the leading teacher preparation programs in the nation. Faculty members are in demand as clinicians, guest lecturers, conductors, and researchers. Music Education majors pursue an accredited curriculum that develops musical knowledge and skills, and prepares students to become accomplished music educators. Students must select one of two options: Instrumental or Choral.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) and the College of Health and Human Sciences section in this catalog or in the Education Building, Room 111.

**Options**

- Choral Option
- Instrumental Option

**Major in Music (B.M.), Music Education Concentration, Choral Option**

**Requirements**

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music. Music majors concentrating in music education must also complete all required education courses with a minimum grade of C.
Effective Fall 2016

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Choral Option. Required EDUC courses must be completed with a minimum grade of C.

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<td>Arts and Humanties</td>
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| Total Credits | 31 |

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</tr>
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<tr>
<td>MU *** Ensemble (see list below)</td>
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<tr>
<td>Advanced Writing</td>
</tr>
<tr>
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<tr>
<td>Historical Perspectives</td>
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| Total Credits | 32 |

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<td>MU 254</td>
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<td>MU 355</td>
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Biological and Physical Sciences  

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**Senior**

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<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
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<td>EDUC 476</td>
<td>Choral Methods for Secondary Schools</td>
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<tr>
<td>EDUC 485A</td>
<td>Student Teaching: Elementary</td>
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<td>EDUC 485B</td>
<td>Student Teaching: Secondary</td>
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<td>EDUC 486E</td>
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<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
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<td>MU 425</td>
<td>Jazz Pedagogy</td>
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<td>MU 467</td>
<td>Vocal Pedagogy</td>
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<td>Ensemble (see list below)</td>
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**Program Total Credits:** 126

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**Applied Music Instruction - Lower-Division**

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<td>MU 272A</td>
<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
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<tr>
<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
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</tr>
<tr>
<td>MU 272G</td>
<td>Applied Music Instruction: Harpsichord</td>
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</tr>
<tr>
<td>MU 272H</td>
<td>Applied Music Instruction: Organ</td>
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<tr>
<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
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</tr>
<tr>
<td>MU 272J</td>
<td>Applied Music Instruction: Percussion</td>
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</tr>
<tr>
<td>MU 272K</td>
<td>Applied Music Instruction: Guitar</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272L</td>
<td>Applied Music Instruction: Harp</td>
<td>1-2</td>
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<tr>
<td>MU 272M</td>
<td>Applied Music Instruction: String Bass</td>
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<tr>
<td>MU 272N</td>
<td>Applied Music Instruction: Viola</td>
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<tr>
<td>MU 272O</td>
<td>Applied Music Instruction: Violin</td>
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</tr>
<tr>
<td>MU 272P</td>
<td>Applied Music Instruction: Violoncello</td>
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<td>MU 272Q</td>
<td>Applied Music Instruction: Voice</td>
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<td>MU 272R</td>
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<td>MU 272S</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 272T</td>
<td>Applied Music Instruction: Flute</td>
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<tr>
<td>MU 272U</td>
<td>Applied Music Instruction: Oboe</td>
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<tr>
<td>MU 272V</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
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**Applied Music Instruction - Upper-Division**

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<tbody>
<tr>
<td>MU 472A</td>
<td>Applied Music Instruction: Euphonium</td>
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<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472C</td>
<td>Applied Music Instruction: Trombone</td>
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<td>Applied Music Instruction: Harpsichord</td>
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<tr>
<td>MU 472H</td>
<td>Applied Music Instruction: Organ</td>
<td>1-2</td>
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</tbody>
</table>
MU 472I  Applied Music Instruction: Piano  1-2
MU 472J  Applied Music Instruction: Percussion  1-2
MU 472K  Applied Music Instruction: Guitar  1-2
MU 472L  Applied Music Instruction: Harp  1-2
MU 472M  Applied Music Instruction: String Bass  1-2
MU 472N  Applied Music Instruction: Viola  1-2
MU 472O  Applied Music Instruction: Violin  1-2
MU 472P  Applied Music Instruction: Violoncello  1-2
MU 472Q  Applied Music Instruction: Voice  1-2
MU 472R  Applied Music Instruction: Bassoon  1-2
MU 472S  Applied Music Instruction: Clarinet  1-2
MU 472T  Applied Music Instruction: Flute  1-2
MU 472U  Applied Music Instruction: Oboe  1-2
MU 472V  Applied Music Instruction: Saxophone (Alto)  1-2

**Ensemble Courses**

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<tr>
<td>MU 201</td>
<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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</tr>
<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
<td>1</td>
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<tr>
<td>MU 302</td>
<td>University Orchestra</td>
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<td>MU 304</td>
<td>Symphonic Band</td>
<td>1</td>
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<tr>
<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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<td>MU 309</td>
<td>Jazz Ensemble</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<td>MU 401</td>
<td>Opera Theater</td>
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<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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<td>MU 404</td>
<td>Symphonic Wind Ensemble</td>
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<td>MU 407</td>
<td>Accompanying</td>
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<tr>
<td>MU 408</td>
<td>Chamber Music</td>
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1 Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective

2 Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study this must be achieved by taking MU 408 or through another small ensemble experience.

---

**Major Completion Map**

**Distinctive Requirements for Degree Program:** A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Choral Option. Music majors concentrating in music education must also complete all required education courses with a minimum grade of C.

**To Declare this Major:** Audition with department.

---

**Freshman**

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<tr>
<td>MU 131</td>
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<td>X</td>
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<td>3</td>
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<td>MU 150</td>
<td></td>
<td>X</td>
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<tr>
<td>MU 172A</td>
<td>Freshman Voice Studio: English/Italian</td>
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Major in Music (B.M.), Music Education Concentration, Choral Option

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<td>Arts and Humanities</td>
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Total Credits: 14

**Sophomore**

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Total Credits: 17

**Junior**

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<td>MU 254</td>
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<tr>
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<td>MU 334</td>
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<td>4A,4B</td>
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<td>Ensemble</td>
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Total Credits: 16

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<td>MU 355</td>
<td>Choral Conducting and Literature</td>
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<tr>
<td>MU 466</td>
<td>Song Literature</td>
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<tr>
<td>MU 472*</td>
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<td>Ensemble (See List on Concentration Requirements Tab)</td>
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**Total Credits:** 17

**Senior**

**Semester 7**

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<td>Choral Methods for Secondary Schools</td>
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<td>EDUC 486E</td>
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<td>MU 425</td>
<td>Jazz Pedagogy</td>
<td></td>
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</tr>
<tr>
<td>MU 467</td>
<td>Vocal Pedagogy</td>
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<tr>
<td>MU 471</td>
<td>Recital</td>
<td></td>
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<tr>
<td>MU 472*</td>
<td>Applied Music Instruction Upper-Division</td>
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<td>Global and Cultural Awareness</td>
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**Total Credits:** 17

**Semester 8**

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<tr>
<td>EDUC 485A</td>
<td>Student Teaching: Elementary</td>
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<td>EDUC 485B</td>
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<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
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**Total Credits:** 13

**Program Total Credits:** 126

---

**Major in Music (B.M.), Music Education Concentration, Instrumental Option Requirements**

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music. Music majors concentrating in music education must also complete all required education courses with a minimum grade of C.

**Effective Fall 2016**

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Instrumental option. Required EDUC courses must be completed with a minimum grade of C.

**Freshman**

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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>MU 117</td>
<td>Music Theory I</td>
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<td>MU 118</td>
<td>Music Theory II</td>
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<td>MU 131</td>
<td>Introduction to Music History and Literature (GT-AH1)</td>
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<td>MU 150</td>
<td>Piano Class I</td>
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<td>MU 151</td>
<td>Piano Skills for Music Educators</td>
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<td>MU 251</td>
<td>Voice Techniques</td>
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<tr>
<td>MU 252B</td>
<td>Instrumental Techniques: Woodwinds</td>
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</table>
### Major in Music (B.M.), Music Education Concentration, Instrumental Option

**Applied Music Instruction – Lower-Division (see list below)**
- **MU 286** Practicum-Introduction to Music Education 3
- **MU *** Ensemble (see list below)** 2
- Arts and Humanities 3B 3
- Mathematics 1B 3

| Total Credits | 32 |

**Sophomore**

<table>
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<tr>
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<td>Schooling in the United States (GT-SS3)</td>
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<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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<td>MU 217</td>
<td>Music Theory III</td>
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<td>MU 218</td>
<td>Music Theory IV</td>
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<tr>
<td>MU 252A</td>
<td>Instrumental Techniques: Brass</td>
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</tr>
<tr>
<td>MU 252C</td>
<td>Instrumental Techniques: Strings</td>
<td>1</td>
</tr>
<tr>
<td>Applied Music Instruction – Lower-Division (see list below)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MU *** Ensemble (see list below)</td>
<td>3</td>
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<tr>
<td>Advanced Writing</td>
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<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>3A 4</td>
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<tr>
<td>Historical Perspectives</td>
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| Total Credits | 31 |

**Junior**

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<tr>
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<td>Educational Technology and Assessment</td>
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<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>3</td>
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<td>EDUC 386</td>
<td>Practicum/Instruction I</td>
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<tr>
<td>EDUC 474</td>
<td>Elementary Music Methods I</td>
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<tr>
<td>EDUC 475</td>
<td>Elementary Music Methods II</td>
<td>2</td>
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<tr>
<td>MU 254</td>
<td>Beginning Conducting</td>
<td>2</td>
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<tr>
<td>MU 317</td>
<td>Music Theory V</td>
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<tr>
<td>MU 318</td>
<td>Arranging and Orchestration</td>
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<td>MU 334</td>
<td>Music History I</td>
<td>4A,4B 3</td>
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<td>Music History II</td>
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<td>MU 356</td>
<td>Instrumental Conducting and Literature</td>
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<td>Select one from the following:</td>
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<tr>
<td>MU 420</td>
<td>Marching Band Techniques</td>
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<td>Orchestral Techniques</td>
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<td>MU *** Ensemble (see list below)</td>
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<tr>
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| Total Credits | 33 |

**Senior**

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<td>EDUC 477</td>
<td>Instrumental Methods for Secondary Schools</td>
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<tr>
<td>EDUC 485A</td>
<td>Student Teaching: Elementary</td>
<td>6</td>
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<tr>
<td>EDUC 485B</td>
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<td>EDUC 486E</td>
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<tr>
<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
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</tr>
<tr>
<td>MU 252D</td>
<td>Instrumental Techniques: Percussion</td>
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<tr>
<td>MU 425</td>
<td>Jazz Pedagogy</td>
<td>2</td>
</tr>
<tr>
<td>MU 471</td>
<td>Recital</td>
<td>4C 1</td>
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| Applied Music Instruction – Upper-Division (see list below) | 2 |

| Total Credits | 33 |
**Applied Music Instruction - Lower-Division**

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<thead>
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<tr>
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<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
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<tr>
<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
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<tr>
<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
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<tr>
<td>MU 272G</td>
<td>Applied Music Instruction: Harpsichord</td>
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</tr>
<tr>
<td>MU 272H</td>
<td>Applied Music Instruction: Organ</td>
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<tr>
<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
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<tr>
<td>MU 272J</td>
<td>Applied Music Instruction: Percussion</td>
<td>1-2</td>
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<tr>
<td>MU 272K</td>
<td>Applied Music Instruction: Guitar</td>
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<td>MU 272L</td>
<td>Applied Music Instruction: Harp</td>
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<tr>
<td>MU 272M</td>
<td>Applied Music Instruction: String Bass</td>
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<td>MU 272N</td>
<td>Applied Music Instruction: Viola</td>
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</tr>
<tr>
<td>MU 272O</td>
<td>Applied Music Instruction: Violin</td>
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<tr>
<td>MU 272P</td>
<td>Applied Music Instruction: Violoncello</td>
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<td>MU 272Q</td>
<td>Applied Music Instruction: Voice</td>
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<td>MU 272R</td>
<td>Applied Music Instruction: Bassoon</td>
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<tr>
<td>MU 272S</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 272T</td>
<td>Applied Music Instruction: Flute</td>
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<td>MU 272U</td>
<td>Applied Music Instruction: Oboe</td>
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<td>MU 272V</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
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**Applied Music Instruction - Upper-Division**

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<tr>
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<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
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<td>MU 472C</td>
<td>Applied Music Instruction: Trombone</td>
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<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
</tr>
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<td>MU 472E</td>
<td>Applied Music Instruction: Tuba</td>
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</tr>
<tr>
<td>MU 472G</td>
<td>Applied Music Instruction: Harpsichord</td>
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</tr>
<tr>
<td>MU 472H</td>
<td>Applied Music Instruction: Organ</td>
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</tr>
<tr>
<td>MU 472I</td>
<td>Applied Music Instruction: Piano</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472J</td>
<td>Applied Music Instruction: Percussion</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472K</td>
<td>Applied Music Instruction: Guitar</td>
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<td>MU 472M</td>
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<td>MU 472R</td>
<td>Applied Music Instruction: Bassoon</td>
<td>1-2</td>
</tr>
<tr>
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<td>Applied Music Instruction: Clarinet</td>
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<td>MU 472T</td>
<td>Applied Music Instruction: Flute</td>
<td>1-2</td>
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<td>MU 472U</td>
<td>Applied Music Instruction: Oboe</td>
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**MU 472V**  
Applied Music Instruction: Saxophone (Alto)  
1-2

### Ensemble Courses

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<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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<td>MU 300</td>
<td>Women's Chorus</td>
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<tr>
<td>MU 302</td>
<td>University Orchestra</td>
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<td>MU 304</td>
<td>Symphonic Band</td>
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<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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<td>MU 309</td>
<td>Jazz Ensemble</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<td>MU 401</td>
<td>Opera Theater</td>
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<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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<td>MU 404</td>
<td>Symphonic Wind Ensemble</td>
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<td>MU 407</td>
<td>Accompanying</td>
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<td>MU 408</td>
<td>Chamber Music</td>
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</table>

1. Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective  
2. Major instrument; two semesters except senior year.  
3. Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B,MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience. Wind and percussion majors must take MU 204 twice during their four year program.  
4. Wind and percussion majors take MU 420; string majors take MU 421.  
5. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:** A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Education Concentration, Instrumental Option. Music majors concentrating in music education must also complete all required education courses with a minimum grade of C.

**To Declare this Major:** Audition with department.

### Freshman

#### Semester 1

<table>
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<td>MU 150</td>
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<td>MU 251</td>
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<td>MU 286</td>
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**Total Credits:** 17

#### Semester 2

<table>
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</table>

*MU 272* represents Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab).*
MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)  X  1
Ensemble (See List on Concentration Requirements Tab)  X  1
Arts and Humanities  X  3B  3
Mathematics  X  1B  3
CO 150 must be completed by the end of Semester 2.  X

| Total Credits | 15 |

**Sophomore**

**Semester 3**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>EDUC 275 Schooling in the United States (GT-SS3)</td>
<td>X</td>
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<td>MU 217 Music Theory III</td>
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<td>MU 252C Instrumental Techniques: Strings</td>
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<td>MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Advanced Writing</td>
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<td>Historical Perspectives</td>
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<td>MU 151 must be completed by the end of Semester 3.</td>
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| Total Credits | 16 |

**Semester 4**

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<td>MU 252A Instrumental Techniques: Brass</td>
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<tr>
<td>MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
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<tr>
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| Total Credits | 15 |

**Junior**

**Semester 5**

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<td>EDUC 331 Educational Technology and Assessment</td>
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<td>EDUC 474 Elementary Music Methods I</td>
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<td>MU 254 Beginning Conducting</td>
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<td>MU 317 Music Theory V</td>
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<tr>
<td>MU 334 Music History I</td>
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<td></td>
<td>4A,4B</td>
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<tr>
<td>MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)</td>
<td>X</td>
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<td></td>
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<tr>
<td>Ensemble (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Biological and Physical Sciences</td>
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| Total Credits | 16 |

**Semester 6**

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<td>EDUC 386 Practicum-Instruction I</td>
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<td>EDUC 475 Elementary Music Methods II</td>
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<tr>
<td>MU 318 Arranging and Orchestration</td>
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<td>MU 335 Music History II</td>
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<td>MU 356 Instrumental Conducting and Literature</td>
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<td>MU 420 Marching Band Techniques</td>
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<td>MU 421 Orchestral Techniques</td>
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<tr>
<td>MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)</td>
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</table>

| Total Credits | 16 |
Major in Music (B.M.), Music Therapy Concentration

The Music Therapy concentration is designed to prepare the student to work in a variety of health care settings, including hospitals, clinics, rehabilitation facilities, assisted living centers, and in special education settings. Some music therapists maintain private practices or serve as consultants. The Music Therapy program at CSU is internationally recognized for its leadership in clinical training and research.

Requirements

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Effective Fall 2016

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Therapy Concentration.

Freshman

<table>
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<tr>
<th>Course</th>
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<tr>
<td>CHEM 103</td>
<td>Chemistry in Context (GT-SC2)</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>MU 117</td>
<td>Music Theory I</td>
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<td>MU 118</td>
<td>Music Theory II</td>
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<tr>
<td>MU 131</td>
<td>Introduction to Music History and Literature (GT-AH1)</td>
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<tr>
<td>MU 150</td>
<td>Piano Class I</td>
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<tr>
<td>MU 155</td>
<td>Guitar Class I</td>
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Select one group from the following:

- Group A:
  - MU 172A Freshman Voice Studio: English/Italian
  - MU 172B Freshman Voice Studio: German, French

- Group B:
  - Applied Music Instruction - Lower-Division (see list below)

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<thead>
<tr>
<th>Course</th>
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<tr>
<td>MU 241</td>
<td>Introduction to Music Therapy</td>
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<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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<tr>
<td>MU 153</td>
<td>Piano Skills for Music Therapists</td>
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<tr>
<td>MU 217</td>
<td>Music Theory III</td>
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<td>MU 218</td>
<td>Music Theory IV</td>
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<tr>
<td>MU 250</td>
<td>Music Therapy Practice</td>
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<td>MU 254</td>
<td>Beginning Conducting</td>
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<td>MU 440</td>
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<td>OT 215</td>
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<td>Appreciation of Philosophy (GT-AH3)</td>
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<td>General Psychology (GT-SS3)</td>
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**Sophomore**

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<thead>
<tr>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<tr>
<td>MU 157</td>
<td>Voice Class I</td>
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<tr>
<td>MU 335</td>
<td>Music History II</td>
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<tr>
<td>MU 342</td>
<td>Psychology of Music</td>
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<td>MU 443</td>
<td>Music Therapy Methods II</td>
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<tr>
<td>MU 444</td>
<td>Music Therapy Methods III</td>
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<tr>
<td>Applied Music Instruction - Upper-Division (see list below)</td>
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<tr>
<td>MU 486A</td>
<td>Practicum: Music Therapy</td>
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<td>Ensemble (see list below)</td>
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<tr>
<td>PSY 252</td>
<td>Mind, Brain, and Behavior</td>
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<td>PSY 320</td>
<td>Abnormal Psychology</td>
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**Junior**

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<tr>
<td>MU 252D</td>
<td>Instrumental Techniques: Percussion</td>
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<td>MU 343</td>
<td>Research Methods in Music Therapy</td>
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<td>MU 445</td>
<td>Improvisation Techniques in Music Therapy</td>
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<td>Practicum: Music Therapy</td>
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<td>MU 487</td>
<td>Internship</td>
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<td>PSY 452</td>
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<td>PSY 454</td>
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<td>PSY 458</td>
<td>Cognitive Neuroscience</td>
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<td>STAT 201</td>
<td>General Statistics</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<tr>
<td>Historical Perspectives</td>
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<td>Advanced Writing</td>
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## Music Electives

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<tbody>
<tr>
<td>MU 272A</td>
<td>Applied Music Instruction: Euphonium</td>
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<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
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<tr>
<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
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<tr>
<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
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<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
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<td>MU 272G</td>
<td>Applied Music Instruction: Harpsichord</td>
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<td>MU 272H</td>
<td>Applied Music Instruction: Organ</td>
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<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
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<tr>
<td>MU 272J</td>
<td>Applied Music Instruction: Percussion</td>
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<td>MU 272K</td>
<td>Applied Music Instruction: Guitar</td>
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<td>MU 272L</td>
<td>Applied Music Instruction: Harp</td>
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<tr>
<td>MU 272M</td>
<td>Applied Music Instruction: String Bass</td>
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<tr>
<td>MU 272N</td>
<td>Applied Music Instruction: Viola</td>
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<tr>
<td>MU 272O</td>
<td>Applied Music Instruction: Violin</td>
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<td>MU 272P</td>
<td>Applied Music Instruction: Violoncello</td>
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<tr>
<td>MU 272Q</td>
<td>Applied Music Instruction: Voice</td>
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<td>MU 272R</td>
<td>Applied Music Instruction: Bassoon</td>
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<td>MU 272S</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 272T</td>
<td>Applied Music Instruction: Flute</td>
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<tr>
<td>MU 272U</td>
<td>Applied Music Instruction: Oboe</td>
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<tr>
<td>MU 272V</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
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## Applied Music Instruction - Lower-Division

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<tbody>
<tr>
<td>MU 472A</td>
<td>Applied Music Instruction: Euphonium</td>
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<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
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<td>MU 472C</td>
<td>Applied Music Instruction: Trombone</td>
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<td>MU 472D</td>
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<td>MU 472G</td>
<td>Applied Music Instruction: Harpsichord</td>
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<td>MU 472H</td>
<td>Applied Music Instruction: Organ</td>
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<td>MU 472I</td>
<td>Applied Music Instruction: Piano</td>
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<tr>
<td>MU 472J</td>
<td>Applied Music Instruction: Percussion</td>
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</tr>
<tr>
<td>MU 472K</td>
<td>Applied Music Instruction: Guitar</td>
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<tr>
<td>MU 472L</td>
<td>Applied Music Instruction: Harp</td>
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</tr>
<tr>
<td>MU 472M</td>
<td>Applied Music Instruction: String Bass</td>
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<td>MU 472N</td>
<td>Applied Music Instruction: Viola</td>
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<td>MU 472O</td>
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<td>Applied Music Instruction: Violoncello</td>
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<td>MU 472Q</td>
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<td>MU 472R</td>
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<td>MU 472S</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 472T</td>
<td>Applied Music Instruction: Flute</td>
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</tr>
<tr>
<td>MU 472U</td>
<td>Applied Music Instruction: Oboe</td>
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<tr>
<td>MU 472V</td>
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## Ensemble Courses

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<tr>
<td>MU 201</td>
<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
<td>1</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
<td>1</td>
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<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
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<tr>
<td>MU 302</td>
<td>University Orchestra</td>
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<tr>
<td>MU 304</td>
<td>Symphonic Band</td>
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<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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<td>MU 309</td>
<td>Jazz Ensemble</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<tr>
<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<tr>
<td>MU 401</td>
<td>Opera Theater</td>
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<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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<td>MU 404</td>
<td>Symphonic Wind Ensemble</td>
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<td>MU 407</td>
<td>Accompanying</td>
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<tr>
<td>MU 408</td>
<td>Chamber Music</td>
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</table>

1. Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective.
2. First-year voice students must take MU 172A and MU 172B, then MU 272Q the second year for two semesters; instrumentalists take MU 272A-MU 272P or MU 272R-MU 272V on a major instrument for 2 semesters each of the first two years.
3. Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.
4. Instrumental majors only.

## Major Completion Map

### Distinctive Requirements for Degree Program
A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Music Therapy Concentration.

### To Declare this Major
Audition with department.

### Freshman

#### Semester 1

<table>
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<th>Credits</th>
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<tbody>
<tr>
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<td>1A</td>
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<tr>
<td>MU 117</td>
<td></td>
<td>X</td>
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<tr>
<td>MU 131</td>
<td></td>
<td>3B</td>
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Select one course from the following:

- MU 172A Freshman Voice Studio: English/Italian
- MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)

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<tr>
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<td>Ensemble (See List on Concentration Requirements Tab)</td>
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Total Credits 15

#### Semester 2

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<td>X</td>
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<td>3</td>
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<td>MU 118</td>
<td></td>
<td>X</td>
<td></td>
<td>4</td>
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<tr>
<td>MU 150</td>
<td></td>
<td>X</td>
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<tr>
<td>MU 155</td>
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Select one course from the following:

- MU 172B Freshman Voice Studio: German, French

<table>
<thead>
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<th>Course</th>
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</table>
### Major in Music (B.M.), Music Therapy Concentration

**MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)**  
Ensemble (See List on Concentration Requirements Tab)  
Mathematics  
CO 150 and MU 131 must be completed by the end of Semester 2.  

| Total Credits | 15 |

**Sophomore**

**Semester 3**

<table>
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<tr>
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<tbody>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>X</td>
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<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>MU 153</td>
<td>Piano Skills for Music Therapists</td>
<td>X</td>
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<tr>
<td>MU 217</td>
<td>Music Theory III</td>
<td>X</td>
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<td>MU 250</td>
<td>Music Therapy Practice</td>
<td>X</td>
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<tr>
<td>MU 254</td>
<td>Beginning Conducting</td>
<td>X</td>
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<tr>
<td>MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
<td>X</td>
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<tr>
<td>Ensemble (See List on Concentration Requirements Tab)</td>
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| Total Credits | 16 |

**Semester 4**

<table>
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<tbody>
<tr>
<td>MU 218</td>
<td>Music Theory IV</td>
<td>X</td>
<td>4</td>
</tr>
<tr>
<td>MU 272* Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
<td>X</td>
<td>1</td>
<td></td>
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<tr>
<td>MU 440</td>
<td>Music Therapy Methods I</td>
<td>X</td>
<td>3</td>
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<td>OT 215</td>
<td>Medical Terminology</td>
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<tr>
<td>PHIL 100</td>
<td>Appreciation of Philosophy (GT-AH3)</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
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<td>3C</td>
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<tr>
<td>BZ 110, BZ 111, CHEM 103, and MU 153 must be completed by the end of Semester 4.</td>
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| Total Credits | 16 |

**Junior**

**Semester 5**

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<th>Credits</th>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td>X</td>
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<tr>
<td>MU 157</td>
<td>Voice Class I</td>
<td>X</td>
<td>2</td>
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<tr>
<td>MU 342</td>
<td>Psychology of Music</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>MU 443</td>
<td>Music Therapy Methods II</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)</td>
<td>X</td>
<td>1</td>
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<tr>
<td>MU 486A</td>
<td>Practicum: Music Therapy</td>
<td>X</td>
<td>4C</td>
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<tr>
<td>PSY 320</td>
<td>Abnormal Psychology</td>
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<td>3</td>
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<tr>
<td>Ensemble (See List on Concentration Requirements Tab)</td>
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| Total Credits | 18 |

**Semester 6**

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<tbody>
<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<tr>
<td>MU 335</td>
<td>Music History II</td>
<td>X</td>
<td>4A,4B</td>
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<tr>
<td>MU 444</td>
<td>Music Therapy Methods III</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>MU 486A</td>
<td>Practicum: Music Therapy</td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>PSY 252</td>
<td>Mind, Brain, and Behavior</td>
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| Total Credits | 14 |

**Senior**

**Semester 7**

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<th>Credits</th>
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<tbody>
<tr>
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<td>Practicum: Music Therapy</td>
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<td>4C</td>
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<tr>
<td>STAT 201</td>
<td>General Statistics</td>
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| Total Credits | 14 |
Major in Music (B.M.), Performance Concentration

The Bachelor of Music in Performance degree program features extensive private applied instruction by a specialist on each instrument or voice. Many performance opportunities are included in the four-year curriculum, ranging from solo recitals to large and small ensemble participation. Only the most proficient undergraduate musicians are accepted into the Performance degree option and graduation from this program indicates that the student has achieved a high degree of musical achievement. Seven options exist in this concentration: Jazz Studies, Orchestral Instrument, Organ, Piano, Piano Pedagogy, String Pedagogy, and Voice.

In order to complete the Performance concentration using the core, students must select from one of the following options: Orchestral Instrument, Organ, Piano, Piano Pedagogy, or String Pedagogy. The complete program is 120 credits, 42 of which are to be upper-division (300-400 level).

Options

- Jazz Studies Option
- Orchestral Instrument Option
- Organ Option
- Piano Option
- Piano Pedagogy Option
- String Pedagogy Option
- Voice Option

Major in Music (B.M.), Performance Concentration, Jazz Studies Option

Requirements

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Effective Fall 2016

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Jazz Studies Option.

Freshman

<table>
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<tr>
<th>Course</th>
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<tr>
<td>CO 150</td>
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</tr>
<tr>
<td>MU 117</td>
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<tr>
<td>MU 131</td>
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</tr>
<tr>
<td>MU 150</td>
<td>I</td>
<td>1</td>
</tr>
<tr>
<td>Applied Music Instruction – Lower-Division (see list below)</td>
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## Major in Music (B.M.), Performance Concentration, Jazz Studies Option

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MU 274A</td>
<td>Applied Jazz Instruction: Piano</td>
<td>2</td>
</tr>
<tr>
<td>MU 274B</td>
<td>Applied Jazz Instruction: String Bass</td>
<td>2</td>
</tr>
<tr>
<td>MU 274C</td>
<td>Applied Jazz Instruction: Trombone</td>
<td>2</td>
</tr>
<tr>
<td>MU 274D</td>
<td>Applied Jazz Instruction: Trumpet</td>
<td>2</td>
</tr>
<tr>
<td>MU 274E</td>
<td>Applied Jazz Instruction: Percussion</td>
<td>2</td>
</tr>
<tr>
<td>MU 274F</td>
<td>Applied Jazz Instruction: Saxophone</td>
<td>2</td>
</tr>
<tr>
<td>MU 274G</td>
<td>Applied Jazz Instruction: Guitar</td>
<td>2</td>
</tr>
<tr>
<td>MU *** Ensemble (see list below)</td>
<td>4</td>
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<tr>
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### Total Credits: 29

#### Sophomore

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<td>ETST 250/HIST 250</td>
<td>African American History (GT-HI1)</td>
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<td>MU 154</td>
<td>Jazz Piano Class</td>
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<tr>
<td>MU 217</td>
<td>Music Theory III</td>
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<td>MU 218</td>
<td>Music Theory IV</td>
<td>4</td>
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<td>MU 225</td>
<td>Jazz Theory</td>
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<tr>
<td>Applied Music Instruction – Lower-Division (see list below)</td>
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Applied Jazz Instruction (select two credits from the following): 2

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<th>Course Title</th>
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<tbody>
<tr>
<td>MU 274A</td>
<td>Applied Jazz Instruction: Piano</td>
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</tr>
<tr>
<td>MU 274B</td>
<td>Applied Jazz Instruction: String Bass</td>
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<tr>
<td>MU 274C</td>
<td>Applied Jazz Instruction: Trombone</td>
<td>2</td>
</tr>
<tr>
<td>MU 274D</td>
<td>Applied Jazz Instruction: Trumpet</td>
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<tr>
<td>MU 274E</td>
<td>Applied Jazz Instruction: Percussion</td>
<td>2</td>
</tr>
<tr>
<td>MU 274F</td>
<td>Applied Jazz Instruction: Saxophone</td>
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</tr>
<tr>
<td>MU 274G</td>
<td>Applied Jazz Instruction: Guitar</td>
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<td>MU *** Ensemble (see list below)</td>
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<tr>
<td>PSY 100</td>
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### Total Credits: 31

#### Junior

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<tr>
<td>MU 317</td>
<td>Music Theory V</td>
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<tr>
<td>MU 320</td>
<td>Jazz Improvisation</td>
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<tr>
<td>MU 325</td>
<td>Jazz Composition/Arranging</td>
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<tr>
<td>MU 334</td>
<td>Music History I</td>
<td>4A,4B</td>
</tr>
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<td>MU 335</td>
<td>Music History II</td>
<td>4A,4B</td>
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<tr>
<td>MU 471</td>
<td>Recital</td>
<td>4C</td>
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<tr>
<td>MU 474</td>
<td>Applied Jazz Instruction</td>
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<td>MU *** Ensemble (see list below)</td>
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<td>MU *** Music Electives</td>
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<td>Arts and Humanities</td>
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### Total Credits: 30

#### Senior

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<td>MU 332</td>
<td>History of Jazz</td>
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<td>MU 415</td>
<td>Advanced Jazz Techniques</td>
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<tr>
<td>MU 425</td>
<td>Jazz Pedagogy</td>
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### Total Credits: 30
<table>
<thead>
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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MU 471</td>
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<td>4C</td>
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<tr>
<td>MU 474</td>
<td>Applied Jazz Instruction</td>
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<tr>
<td>MU ***</td>
<td>Ensemble (see list below)</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<td><strong>Total Credits</strong></td>
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**Program Total Credits:** 120

### Applied Music Instruction - Lower-Division

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<tbody>
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<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
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<tr>
<td>MU 272F</td>
<td>Applied Music Instruction: Harpsichord</td>
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<td>MU 272G</td>
<td>Applied Music Instruction: Organ</td>
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</tr>
<tr>
<td>MU 272H</td>
<td>Applied Music Instruction: Piano</td>
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<tr>
<td>MU 272I</td>
<td>Applied Music Instruction: Percussion</td>
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<tr>
<td>MU 272J</td>
<td>Applied Music Instruction: Guitar</td>
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<td>MU 272K</td>
<td>Applied Music Instruction: Harp</td>
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<td>MU 272L</td>
<td>Applied Music Instruction: String Bass</td>
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<td>MU 272M</td>
<td>Applied Music Instruction: Violin</td>
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<td>MU 272N</td>
<td>Applied Music Instruction: Viola</td>
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<td>MU 272P</td>
<td>Applied Music Instruction: Voice</td>
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<td>MU 272Q</td>
<td>Applied Music Instruction: Bassoon</td>
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<td>MU 272R</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 272S</td>
<td>Applied Music Instruction: Flute</td>
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<td>MU 272T</td>
<td>Applied Music Instruction: Oboe</td>
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</tr>
<tr>
<td>MU 272U</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
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### Ensemble Courses

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<tr>
<td>MU 201</td>
<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
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</tr>
<tr>
<td>MU 204</td>
<td>Marching Band</td>
<td>1</td>
</tr>
<tr>
<td>MU 205</td>
<td>Concert Band</td>
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</tr>
<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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</tr>
<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
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</tr>
<tr>
<td>MU 302</td>
<td>University Orchestra</td>
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</tr>
<tr>
<td>MU 304</td>
<td>Symphonic Band</td>
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<tr>
<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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<tr>
<td>MU 309</td>
<td>Jazz Ensemble</td>
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<tr>
<td>MU 310</td>
<td>Jazz Combo</td>
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<tr>
<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<tr>
<td>MU 401</td>
<td>Opera Theater</td>
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<tr>
<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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</tr>
<tr>
<td>MU 404</td>
<td>Symphonic Wind Ensemble</td>
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</tr>
<tr>
<td>MU 407</td>
<td>Accompanying</td>
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</tr>
<tr>
<td>MU 408</td>
<td>Chamber Music</td>
<td>1</td>
</tr>
</tbody>
</table>
B.M. Majors with prior keyboard experience may test out of MU 150 and use the credit toward electives.

Major instrument, two semesters for freshman and sophomore.

Students enrolled in MU 272A-MU 272V should be concurrently enrolled in a concert band (MU 205, MU 304, MU 404). Eight of the total ensemble credits should be satisfied through participation in either MU 309 or MU 310.

Select enough elective credits to bring program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
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<td>X</td>
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<td>Introduction to Music History and Literature (GT-AH1)</td>
<td>X</td>
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<td>Piano Class I</td>
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### Sophomore

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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Major in Music (B.M.), Performance Concentration, Orchestral Instrument Option Requirements**

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.
Effective Fall 2016

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Orchestral Instrument Option.

### Freshman

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<td>CO 150</td>
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<tr>
<td>Applied Music Instruction – Lower-Division (see list below)²</td>
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<td>Historical Perspectives</td>
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### Sophomore

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<td>PSY 100</td>
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<td>MU 318</td>
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<td>4A,4B</td>
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### Senior

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**Electives**

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## Applied Music Instruction - Lower-Division

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<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
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<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
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<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
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<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
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<td>MU 272G</td>
<td>Applied Music Instruction: Harpsichord</td>
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<td>MU 272H</td>
<td>Applied Music Instruction: Organ</td>
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<td>Applied Music Instruction: Piano</td>
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<td>MU 272J</td>
<td>Applied Music Instruction: Percussion</td>
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<td>MU 272K</td>
<td>Applied Music Instruction: Guitar</td>
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<td>MU 272L</td>
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<td>MU 272M</td>
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<td>Applied Music Instruction: Viola</td>
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<td>MU 272O</td>
<td>Applied Music Instruction: Violin</td>
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<td>MU 272P</td>
<td>Applied Music Instruction: Violoncello</td>
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<td>MU 272Q</td>
<td>Applied Music Instruction: Voice</td>
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<td>Applied Music Instruction: Oboe</td>
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## Applied Music Instruction - Upper-Division

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<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
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<td>Applied Music Instruction: Trombone</td>
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<td>MU 472G</td>
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<td>MU 472S</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 472T</td>
<td>Applied Music Instruction: Flute</td>
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<tr>
<td>MU 472U</td>
<td>Applied Music Instruction: Oboe</td>
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<tr>
<td>MU 472V</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
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### Ensemble Courses

<table>
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<tbody>
<tr>
<td>MU 201</td>
<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
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<td>MU 302</td>
<td>University Orchestra</td>
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<tr>
<td>MU 304</td>
<td>Symphonic Band</td>
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</tr>
<tr>
<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
<td>1</td>
</tr>
<tr>
<td>MU 309</td>
<td>Jazz Ensemble</td>
<td>1</td>
</tr>
<tr>
<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<tr>
<td>MU 401</td>
<td>Opera Theater</td>
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<tr>
<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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<tr>
<td>MU 404</td>
<td>Symphonic Wind Ensemble</td>
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<tr>
<td>MU 407</td>
<td>Accompanying</td>
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<tr>
<td>MU 408</td>
<td>Chamber Music</td>
<td>1</td>
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</table>

1. Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective.
2. Major instrument. Take two semesters each during the freshman and sophomore years.
3. Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.
4. Major instrument. Take two semesters each during the junior and senior years.
5. Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

### Major Completion Map

**Distinctive Requirements for Degree Program:** A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Orchestral Instrument Option.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
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<tr>
<td>MU 117</td>
<td>Music Theory I</td>
<td>X</td>
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<td>MU 150</td>
<td>Piano Class I</td>
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<td>MU 272*</td>
<td>Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
<td>X</td>
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<td>Ensemble (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Elective</td>
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<td>Introduction to Music History and Literature (GT-AH1)</td>
<td>X</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>MU 272*</td>
<td>Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)</td>
<td>X</td>
<td>1-2</td>
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<td>Historical Perspectives</td>
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Total Credits 15
### Sophomore

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<tr>
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<tr>
<td>MU 272*</td>
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<td>Ensemble</td>
<td>X</td>
<td></td>
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<td>1</td>
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<td>PSY 100</td>
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Total Credits 15

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<tr>
<td>MU 218</td>
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<tr>
<td>MU 272*</td>
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<td>Ensemble</td>
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Total Credits 16

### Junior

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<tr>
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<tr>
<td>MU 317</td>
<td>X</td>
<td></td>
<td></td>
<td>2</td>
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<td>MU 334</td>
<td>X</td>
<td>4A,4B</td>
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<td>MU 335</td>
<td>Music History II</td>
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<td>4A,4B</td>
<td>3</td>
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<td>MU 417</td>
<td>Countertop</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MU 472*</td>
<td>X</td>
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<td>Ensemble</td>
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Total Credits 16

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<td>MU 471</td>
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<td>MU 472*</td>
<td>X</td>
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<td>Ensemble</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
<td>3</td>
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MU 335 must be completed by the end of Semester 6.

Total Credits 13

### Senior

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<th>Semester 7</th>
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<tbody>
<tr>
<td>MU 472*</td>
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<tr>
<td>Ensemble</td>
<td>X</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
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<td>Music Elective</td>
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<tr>
<td>Elective</td>
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MU 417 must be completed by the end of Semester 7.

Total Credits 15

<table>
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<tr>
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<td>X</td>
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Total Credits 15

---

*MU 272* is Applied Music Instruction Lower-Division (See List on Concentration Requirements Tab)
Major in Music (B.M.), Performance Concentration, Organ Option

Effective Fall 2014

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Freshman

<table>
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<tbody>
<tr>
<td>CO 150</td>
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</tr>
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<td>MU 117</td>
<td>Music Theory I</td>
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<tr>
<td>MU 118</td>
<td>Music Theory II</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MU 131</td>
<td>Introduction to Music History and Literature (GT-AH1)</td>
<td>3B</td>
<td>3</td>
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<tr>
<td>MU 272H</td>
<td>Applied Music Instruction: Organ</td>
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<td>MU ***</td>
<td>Ensemble (see list below)</td>
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<tr>
<td>History</td>
<td>Perspectives</td>
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<tr>
<td>Math</td>
<td>Mathematics</td>
<td>1B</td>
<td>3</td>
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<td>Electives</td>
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Sophomore

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<td>Music Theory IV</td>
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<td>Applied Music Instruction: Organ</td>
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<td>Ensemble (see list below)</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Advanced</td>
<td>Writing</td>
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Junior

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<tr>
<td>MU 254</td>
<td>Beginning Conducting</td>
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<td>MU 317</td>
<td>Music Theory V</td>
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<td>MU 318</td>
<td>Arranging and Orchestration</td>
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<tr>
<td>MU 334</td>
<td>Music History I</td>
<td>4A,4B</td>
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</tr>
<tr>
<td>MU 335</td>
<td>Music History II</td>
<td>4A,4B</td>
<td>3</td>
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<td>MU 417</td>
<td>Counterpoint</td>
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<tr>
<td>MU 471</td>
<td>Recital</td>
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<tr>
<td>Applied</td>
<td>Music Instruction – Upper-Division (see list below)</td>
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<td>Ensemble (see list below)</td>
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<tr>
<td>Arts and</td>
<td>Humanities</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits

Program Total Credits: 120

Major in Music (B.M.), Performance Concentration, Organ Option

Requirements
Electives

<table>
<thead>
<tr>
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**Senior**

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<td>MU 468</td>
<td>Organ Literature</td>
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Applied Music Instruction – Upper-Division (see list below)

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<td>MU 472</td>
<td>Applied Music Instruction: French Horn</td>
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<td>Applied Music Instruction: Trombone</td>
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<td>MU 472</td>
<td>Applied Music Instruction: Trumpet</td>
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<td>Applied Music Instruction: Harpsichord</td>
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<td>Applied Music Instruction: Organ</td>
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<td>Applied Music Instruction: Percussion</td>
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<td>Applied Music Instruction: Guitar</td>
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**Biological and Physical Sciences**

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**Global and Cultural Awareness**

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**Electives**

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**Total Credits**

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**Program Total Credits:**

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**Applied Music Instruction - Upper-Division**

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<tbody>
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<td>MU 201</td>
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<td>MU 202</td>
<td>University Chorus</td>
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<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
<td>1</td>
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<tr>
<td>MU 302</td>
<td>University Orchestra</td>
<td>1</td>
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<tr>
<td>MU 304</td>
<td>Symphonic Band</td>
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<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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**Ensemble Courses**

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<tr>
<td>MU 205</td>
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<td>Women's Chorus</td>
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<tr>
<td>MU 309</td>
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</table>
Major in Music (B.M.), Performance Concentration, Organ Option

MU 310       Jazz Combo                             1
MU 400       Colorado State University Chamber Choir 1
MU 401       Opera Theater                          1-2
MU 402       Theater/Chamber Orchestra              1
MU 404       Symphonic Wind Ensemble                1
MU 407       Accompanying                           1
MU 408       Chamber Music                          1

1 Take two semesters each in the freshman and sophomore years.
2 Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.
3 Take two semesters of a foreign language during the sophomore year.
4 Take two semesters each in the junior and senior years.
5 Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
A grade of C or better is required in all music courses used to satisfy major requirements.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<td>MU 131</td>
<td></td>
<td>X</td>
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## Junior

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**Total Credits: 16**

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<td>MU 471</td>
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**Total Credits: 13**

## Senior

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**Total Credits: 12**

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<td>3E 3</td>
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**The benchmark courses for the 8th semester are the remaining courses in the entire program of study.**

**Total Credits: 13-17**

**Program Total Credits: 120**

---

**Major in Music (B.M.), Performance Concentration, Piano Option Requirements**

**Effective Fall 2014**

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

### Freshman

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<tr>
<td>MU 117</td>
<td>Music Theory I</td>
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<td>MU 118</td>
<td>Music Theory II</td>
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<tr>
<td>MU 131</td>
<td>Introduction to Music History and Literature (GT-AH1)</td>
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<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
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**Sophomore**

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<td>Music Theory IV</td>
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<td>PSY 100</td>
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**Junior**

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<tr>
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<td>MU 317</td>
<td>Music Theory V</td>
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<td>MU 318</td>
<td>Arranging and Orchestration</td>
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<td>MU 334</td>
<td>Music History I</td>
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<td>Music History II</td>
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<td>MU 417</td>
<td>Counterpoint</td>
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<td>MU 471</td>
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<td>Applied Music Instruction – Upper-Division (see list below)</td>
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**Senior**

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**Program Total Credits:** 120

**Applied Music Instruction - Upper-Division**

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<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
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<td>MU 472C</td>
<td>Applied Music Instruction: Trombone</td>
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</table>
MU 472D  Applied Music Instruction: Trumpet  1-2
MU 472E  Applied Music Instruction: Tuba  1-2
MU 472G  Applied Music Instruction: Harpsichord  1-2
MU 472H  Applied Music Instruction: Organ  1-2
MU 472I  Applied Music Instruction: Piano  1-2
MU 472J  Applied Music Instruction: Percussion  1-2
MU 472K  Applied Music Instruction: Guitar  1-2
MU 472L  Applied Music Instruction: Harp  1-2
MU 472M  Applied Music Instruction: String Bass  1-2
MU 472N  Applied Music Instruction: Viola  1-2
MU 472O  Applied Music Instruction: Violin  1-2
MU 472P  Applied Music Instruction: Violoncello  1-2
MU 472Q  Applied Music Instruction: Voice  1-2
MU 472R  Applied Music Instruction: Bassoon  1-2
MU 472S  Applied Music Instruction: Clarinet  1-2
MU 472T  Applied Music Instruction: Flute  1-2
MU 472U  Applied Music Instruction: Oboe  1-2
MU 472V  Applied Music Instruction: Saxophone (Alto)  1-2

**Ensemble Courses**

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<th>Title</th>
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<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
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<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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<td>Jazz Ensemble</td>
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<tr>
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<td>Jazz Combo</td>
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<td>Colorado State University Chamber Choir</td>
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<tr>
<td>MU 408</td>
<td>Chamber Music</td>
<td>1</td>
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</tbody>
</table>

1. Take two semesters each in the freshman and sophomore years.
2. Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.
3. Take two semesters of a foreign language in the sophomore year.
4. Take two semesters each in the junior and senior years.
5. Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
A grade of C or better is required in all music courses used to satisfy major requirements.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td></td>
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<td>1A</td>
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<tr>
<td>MU 117 Music Theory I</td>
<td>X</td>
<td></td>
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<tr>
<td>MU 272I Applied Music Instruction: Piano</td>
<td>X</td>
<td></td>
<td>1-2</td>
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<tr>
<td>Mathematics</td>
<td></td>
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<tr>
<td>Elective</td>
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**Semester 2**

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<tbody>
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<td>MU 131 Introduction to Music History and Literature (GT-AH1)</td>
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<tr>
<td>MU 272I Applied Music Instruction: Piano</td>
<td>X</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>History Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
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<td></td>
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<tr>
<td>Elective</td>
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<td>AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2.</td>
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**Sophomore**

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<td>PSY 100 General Psychology (GT-SS3)</td>
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<td>Advanced Writing</td>
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**Semester 4**

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<tbody>
<tr>
<td>MU 218 Music Theory IV</td>
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<tr>
<td>MU 272I Applied Music Instruction: Piano</td>
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<td></td>
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</tr>
<tr>
<td>L*** *** Foreign Language</td>
<td></td>
<td></td>
<td>5</td>
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<tr>
<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
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<td></td>
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<tr>
<td>Electives</td>
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**Junior**

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<tr>
<td>MU 254 Beginning Conducting</td>
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<tr>
<td>MU 317 Music Theory V</td>
<td>X</td>
<td></td>
<td></td>
<td>2</td>
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<tr>
<td>MU 335 Music History II</td>
<td>X</td>
<td>4A,4B</td>
<td>3</td>
<td></td>
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<tr>
<td>MU 417 Counterpoint</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
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<tr>
<td>MU 472* Applied Music Instruction</td>
<td>X</td>
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<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
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<td><strong>Total Credits</strong></td>
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**Semester 6**

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<td>MU 318 Arranging and Orchestration</td>
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<tr>
<td>MU 334 Music History I</td>
<td>4A,4B</td>
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<td>3</td>
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<tr>
<td>MU 471 Recital</td>
<td>X</td>
<td></td>
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<tr>
<td>MU 472* Applied Music Instruction</td>
<td>X</td>
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<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
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**Elective**
MU 335 must be completed by the end of Semester 6.

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<th>Semester 7</th>
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<td>X</td>
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<tr>
<td>MU 465</td>
<td>X</td>
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<td></td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>Global and Cultural Awareness</td>
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<td>3</td>
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<tr>
<td>MU 472* Applied Music Instruction</td>
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<td>MU*** Music Elective</td>
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<td>MU 417 must be completed by the end of Semester 7.</td>
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**Total Credits** 12

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<th>Semester 8</th>
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<td>MU 471</td>
<td>X</td>
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<td>4C</td>
<td>1</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>X</td>
<td></td>
<td>3A</td>
<td>4</td>
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<tr>
<td>MU 472* Applied Music Instruction</td>
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<td>Electives</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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**Total Credits** 14

**Program Total Credits:** 120

---

**Major in Music (B.M.), Performance Concentration, Piano Pedagogy Option Requirements**

**Effective Fall 2014**

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>MU 117</td>
<td>Music Theory I</td>
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<tr>
<td>MU 118</td>
<td>Music Theory II</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MU 131</td>
<td>Introduction to Music History and Literature (GT-AH1)</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
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<td>2</td>
</tr>
<tr>
<td>MU*** Ensemble (see list below)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
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<tr>
<td>Electives</td>
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**Total Credits** 30

**Sophomore**

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<tbody>
<tr>
<td>L*** *** Foreign language</td>
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<tr>
<td>MU 217</td>
<td>Music Theory III</td>
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<tr>
<td>MU 218</td>
<td>Music Theory IV</td>
<td></td>
<td></td>
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<tr>
<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
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---
**Major in Music (B.M.), Performance Concentration, Piano Pedagogy Option**

**Junior**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MU 317</td>
<td>Music Theory V</td>
<td>2</td>
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<tr>
<td>MU 318</td>
<td>Arranging and Orchestration</td>
<td>2</td>
</tr>
<tr>
<td>MU 334</td>
<td>Music History I</td>
<td>2</td>
</tr>
<tr>
<td>MU 335</td>
<td>Music History II</td>
<td>2</td>
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<tr>
<td>MU 417</td>
<td>Counterpoint</td>
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<tr>
<td>MU 495G</td>
<td>Independent Study: Pedagogy</td>
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**Applied Music Instruction – Upper-Division (see list below)**

**MU *** Ensemble (see list below)**

**Junior Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>PSY 260</td>
<td>Child Psychology</td>
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<td>PSY 465</td>
<td>Adolescent Psychology</td>
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**Arts and Humanities**

<table>
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<tbody>
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<td></td>
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**Total Credits**

34

**Senior**

<table>
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<tbody>
<tr>
<td>MU 407</td>
<td>Accompanying</td>
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<td>MU 465</td>
<td>Keyboard Literature</td>
<td>2</td>
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<tr>
<td>MU 471</td>
<td>Recital</td>
<td>1</td>
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<tr>
<td>MU 495G</td>
<td>Independent Study: Pedagogy</td>
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**Applied Music Instruction – Upper-Division (see list below)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MU 472A</td>
<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472C</td>
<td>Applied Music Instruction: Trombone</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472D</td>
<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472E</td>
<td>Applied Music Instruction: Tuba</td>
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</tr>
<tr>
<td>MU 472G</td>
<td>Applied Music Instruction: Harpsichord</td>
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<td>MU 472H</td>
<td>Applied Music Instruction: Organ</td>
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<tr>
<td>MU 472I</td>
<td>Applied Music Instruction: Piano</td>
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<tr>
<td>MU 472J</td>
<td>Applied Music Instruction: Percussion</td>
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<td>MU 472K</td>
<td>Applied Music Instruction: Guitar</td>
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<td>MU 472L</td>
<td>Applied Music Instruction: Harp</td>
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<tr>
<td>MU 472M</td>
<td>Applied Music Instruction: String Bass</td>
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<td>MU 472N</td>
<td>Applied Music Instruction: Viola</td>
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<tr>
<td>MU 472O</td>
<td>Applied Music Instruction: Violin</td>
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**Program Total Credits:**

120

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**Applied Music Instruction - Upper-Division**

<table>
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<tbody>
<tr>
<td>MU 472A</td>
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<tr>
<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
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<tr>
<td>MU 472C</td>
<td>Applied Music Instruction: Trombone</td>
<td>1-2</td>
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<tr>
<td>MU 472D</td>
<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
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<tr>
<td>MU 472E</td>
<td>Applied Music Instruction: Tuba</td>
<td>1-2</td>
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<tr>
<td>MU 472G</td>
<td>Applied Music Instruction: Harpsichord</td>
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<tr>
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<td>MU 472J</td>
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<tr>
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<td>Applied Music Instruction: Guitar</td>
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<td>MU 472L</td>
<td>Applied Music Instruction: Harp</td>
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<tr>
<td>MU 472M</td>
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<tr>
<td>MU 472O</td>
<td>Applied Music Instruction: Violin</td>
<td>1-2</td>
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</table>
MU 472P  Applied Music Instruction: Violoncello  1-2
MU 472Q  Applied Music Instruction: Voice  1-2
MU 472R  Applied Music Instruction: Bassoon  1-2
MU 472S  Applied Music Instruction: Clarinet  1-2
MU 472T  Applied Music Instruction: Flute  1-2
MU 472U  Applied Music Instruction: Oboe  1-2
MU 472V  Applied Music Instruction: Saxophone (Alto)  1-2

**Ensemble Courses**

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<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
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<tr>
<td>MU 302</td>
<td>University Orchestra</td>
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<td>MU 304</td>
<td>Symphonic Band</td>
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<td>MU 305</td>
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<td>Jazz Ensemble</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<td>MU 401</td>
<td>Opera Theater</td>
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<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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<td>Symphonic Wind Ensemble</td>
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<td>Accompanying</td>
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<tr>
<td>MU 408</td>
<td>Chamber Music</td>
<td>1</td>
</tr>
</tbody>
</table>

1. Take two semesters each in the freshman and sophomore years.
2. Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.
3. Take two semesters of a foreign language in the sophomore year.
4. Take two semesters each in the junior and senior years.
5. Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
A grade of C or better is required in all music courses used to satisfy major requirements.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td></td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MU 117</td>
<td></td>
<td>X</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MU 272I</td>
<td></td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td>1B</td>
<td>3</td>
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<tr>
<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
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<td>1</td>
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<tr>
<td>Elective</td>
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**Total Credits**
15

<table>
<thead>
<tr>
<th>Semester 2</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
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<td>X</td>
<td></td>
<td>4</td>
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<td>MU 131</td>
<td></td>
<td>X</td>
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<td>MU 272I</td>
<td></td>
<td>X</td>
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</table>

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
A grade of C or better is required in all music courses used to satisfy major requirements.
Historical Perspectives 3D 3
MU*** Ensemble (See List on Concentration Requirements Tab) 1
Elective 3
AUCC 1B (MATH) and CO 150 must be completed by the end of Semester 2. X

**Total Credits** 15

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MU 217</td>
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<tr>
<td>MU 272I</td>
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</tr>
<tr>
<td>PSY 100</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Advanced Writing</td>
<td>2</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>L*** *** Foreign Language</td>
<td>5</td>
<td></td>
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</tr>
<tr>
<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
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**Total Credits** 18

<table>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>MU 272I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L*** *** Foreign Language</td>
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**Electives**

**Total Credits** 16

### Junior

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<th>Credits</th>
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<tbody>
<tr>
<td>MU 317</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 334</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 335</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 417</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 495G</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 472*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSY 100</td>
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**Total Credits** 15

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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MU 318</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MU 495G</td>
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<tr>
<td>PSY 465</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 472*</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
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</table>

**Total Credits** 13

### Senior

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MU 407</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU*** Ensemble (See List on Concentration Requirements Tab)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 465</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 495G</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one course from the following:</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 472*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Major in Music (B.M.), Performance Concentration, String Pedagogy Option

### Requirements

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

#### Effective Fall 2016

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, String Pedagogy Option.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MU 117</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MU 118</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MU 131</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>MU 150(^1)</td>
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</table>

Select two semesters from the following:\(^2\)

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>MU 272M</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>MU 272N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU *** Ensemble (see list below)(^3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
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<td>5</td>
</tr>
</tbody>
</table>

**Total Credits**

30

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MU 217</td>
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</tr>
<tr>
<td>MU 218</td>
<td></td>
<td>4</td>
</tr>
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</table>

Select two semesters from the following:\(^2\)

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 272M</td>
<td></td>
<td>2-4</td>
</tr>
<tr>
<td>MU 272O</td>
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<td></td>
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</table>

### Semester 8

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>MU 407</td>
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<td>1</td>
</tr>
<tr>
<td>MU *** Ensemble (See List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 471</td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>MU 495G</td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>X</td>
<td>3A</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
</tr>
<tr>
<td>MU 472* Applied Music Instruction</td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td>Elective</td>
<td>X</td>
<td>3</td>
</tr>
</tbody>
</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

**Total Credits**

15

**Program Total Credits:**

120

---

\(^1\) Piano Class I

\(^2\) Select two semesters from the following: Apply Music Instruction: String Bass, Viola, Violin, Violoncello

\(^3\) MU *** Ensemble (see list below)
### Major in Music (B.M.), Performance Concentration, String Pedagogy Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 272N</td>
<td>Applied Music Instruction: Viola</td>
<td>2</td>
</tr>
<tr>
<td>MU 272O</td>
<td>Applied Music Instruction: Violin</td>
<td></td>
</tr>
<tr>
<td>MU 272P</td>
<td>Applied Music Instruction: Violoncello</td>
<td></td>
</tr>
<tr>
<td>MU ***</td>
<td>Ensemble (see list below)³</td>
<td>3C</td>
</tr>
<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Advanced Writing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>10-12</td>
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<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td>28-32</td>
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#### Junior

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>MU 254</td>
<td>Beginning Conducting</td>
<td>2</td>
</tr>
<tr>
<td>MU 317</td>
<td>Music Theory V</td>
<td>2</td>
</tr>
<tr>
<td>MU 318</td>
<td>Arranging and Orchestration</td>
<td>2</td>
</tr>
<tr>
<td>MU 334</td>
<td>Music History I</td>
<td>4A,4B</td>
</tr>
<tr>
<td>MU 335</td>
<td>Music History II</td>
<td>4A,4B</td>
</tr>
<tr>
<td></td>
<td><strong>Select two credits from the following:</strong></td>
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</tr>
<tr>
<td>MU 351A</td>
<td>String Pedagogy I: Violin/Viola</td>
<td></td>
</tr>
<tr>
<td>MU 351B</td>
<td>String Pedagogy I: Violoncello</td>
<td></td>
</tr>
<tr>
<td>MU 351C</td>
<td>String Pedagogy I: String Bass</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Select two credits from the following:</strong></td>
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</tr>
<tr>
<td>MU 352A</td>
<td>String Pedagogy II: Violin/Viola</td>
<td></td>
</tr>
<tr>
<td>MU 352B</td>
<td>String Pedagogy II: Violoncello</td>
<td></td>
</tr>
<tr>
<td>MU 352C</td>
<td>String Pedagogy II: String Bass</td>
<td></td>
</tr>
<tr>
<td>MU 417</td>
<td>Counterpoint</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Applied Music Instruction – Upper-Division (see list below)⁴</strong></td>
<td>4</td>
</tr>
<tr>
<td>MU ***</td>
<td>Ensemble (see list below)³</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Select one from the following:</strong></td>
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<tr>
<td>PSY 260</td>
<td>Child Psychology</td>
<td>3B</td>
</tr>
<tr>
<td>PSY 465</td>
<td>Adolescent Psychology</td>
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<tr>
<td></td>
<td><strong>Arts and Humanities</strong></td>
<td>3B</td>
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#### Senior

<table>
<thead>
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<th>Course</th>
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<tbody>
<tr>
<td>MU 451A</td>
<td>String Pedagogy III: Violin</td>
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<tr>
<td>MU 451B</td>
<td>String Pedagogy III: Violoncello</td>
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<tr>
<td>MU 451C</td>
<td>String Pedagogy III: String Bass</td>
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<td><strong>Select two credits from the following:</strong></td>
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</tr>
<tr>
<td>MU 464A</td>
<td>String Literature: Violin/Viola</td>
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<tr>
<td>MU 464B</td>
<td>String Literature: Violoncello</td>
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</tr>
<tr>
<td>MU 464C</td>
<td>String Literature: String Bass</td>
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<tr>
<td>MU 471</td>
<td>Recital</td>
<td>4C</td>
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<td></td>
<td><strong>Applied Music Instruction – Upper-Division (see list below)⁴</strong></td>
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</tr>
<tr>
<td>MU ***</td>
<td>Ensemble (see list below)³</td>
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</tr>
<tr>
<td>MU ***</td>
<td>Music Electives</td>
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<td></td>
<td><strong>Biological and Physical Sciences</strong></td>
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<tr>
<td></td>
<td><strong>Global and Cultural Awareness</strong></td>
<td>3E</td>
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# Applied Music Instruction - Upper-Division

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<tbody>
<tr>
<td>MU 472A</td>
<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 472B</td>
<td>Applied Music Instruction: French Horn</td>
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</tr>
<tr>
<td>MU 472C</td>
<td>Applied Music Instruction: Trombone</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472D</td>
<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472E</td>
<td>Applied Music Instruction: Tuba</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472F</td>
<td>Applied Music Instruction: Harpsichord</td>
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<tr>
<td>MU 472G</td>
<td>Applied Music Instruction: Organ</td>
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</tr>
<tr>
<td>MU 472H</td>
<td>Applied Music Instruction: Piano</td>
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</tr>
<tr>
<td>MU 472I</td>
<td>Applied Music Instruction: Percussion</td>
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</tr>
<tr>
<td>MU 472J</td>
<td>Applied Music Instruction: Guitar</td>
<td>1-2</td>
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<tr>
<td>MU 472K</td>
<td>Applied Music Instruction: Harp</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472L</td>
<td>Applied Music Instruction: String Bass</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 472M</td>
<td>Applied Music Instruction: Viola</td>
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<tr>
<td>MU 472N</td>
<td>Applied Music Instruction: Violin</td>
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<td>MU 472O</td>
<td>Applied Music Instruction: Violoncello</td>
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<td>MU 472P</td>
<td>Applied Music Instruction: Voice</td>
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<tr>
<td>MU 472Q</td>
<td>Applied Music Instruction: Bassoon</td>
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<td>MU 472R</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 472S</td>
<td>Applied Music Instruction: Flute</td>
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<td>MU 472T</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
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# Ensemble Courses

<table>
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<tbody>
<tr>
<td>MU 201</td>
<td>Men's Chorus</td>
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<tr>
<td>MU 202</td>
<td>University Chorus</td>
<td>1</td>
</tr>
<tr>
<td>MU 204</td>
<td>Marching Band</td>
<td>1</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
<td>1</td>
</tr>
<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
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<td>University Orchestra</td>
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<td>MU 304</td>
<td>Symphonic Band</td>
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<td>Colorado State University Concert Choir</td>
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<td>Jazz Ensemble</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
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<td>MU 401</td>
<td>Opera Theater</td>
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<td>MU 402</td>
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<td>MU 408</td>
<td>Chamber Music</td>
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1. Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective.
2. Take two semesters each in the freshman and sophomore years.
3. Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.
4. Major instrument. Take two semesters each in the junior and senior years.
5. Select enough elective credits to bring the program total to 120, of which at least 42 must be upper-division (300- to 400-level).
**Major Completion Map**

**Distinctive Requirements for Degree Program:** A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, String Pedagogy Option.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<th>Credits</th>
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<tr>
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<td>MU 131</td>
<td></td>
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<td>3</td>
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Select one course from the following:

- MU 272M  Applied Music Instruction: String Bass
- MU 272N  Applied Music Instruction: Viola
- MU 272O  Applied Music Instruction: Violin
- MU 272P  Applied Music Instruction: Violoncello

Ensemble (See List on Concentration Requirements Tab)  X  1

**Total Credits**  15

<table>
<thead>
<tr>
<th>Semester 2</th>
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<tr>
<td>MU 150</td>
<td></td>
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</table>

Select one course from the following:

- MU 272M  Applied Music Instruction: String Bass
- MU 272N  Applied Music Instruction: Viola
- MU 272O  Applied Music Instruction: Violin
- MU 272P  Applied Music Instruction: Violoncello

Ensemble (See List on Concentration Requirements Tab)  X  1

Historical Perspectives  3D  3

Electives  5

CO 150 and AUCC 1B (MATH) requirement must be completed by the end of Semester 2.

**Total Credits**  15

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MU 217</td>
<td></td>
<td>X</td>
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</table>

Select one course from the following:

- MU 272M  Applied Music Instruction: String Bass
- MU 272N  Applied Music Instruction: Viola
- MU 272O  Applied Music Instruction: Violin
- MU 272P  Applied Music Instruction: Violoncello

Ensemble (See List on Concentration Requirements Tab)  X  1

PSY 100 General Psychology (GT-SS3)  3C  3

Advanced Writing  2  3

Elective  3-4

**Total Credits**  16

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<tr>
<th>Semester 4</th>
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<th>Credits</th>
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<tr>
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</table>

Select one course from the following:

- MU 272M  Applied Music Instruction: String Bass
- MU 272N  Applied Music Instruction: Viola
- MU 272O  Applied Music Instruction: Violin
- MU 272P  Applied Music Instruction: Violoncello

Ensemble (See List on Concentration Requirements Tab)  X  1
<table>
<thead>
<tr>
<th>Semester</th>
<th>Critical</th>
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<th>Credits</th>
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<td>MU 254</td>
<td>Beginning Conducting</td>
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<td>MU 317</td>
<td>Music Theory V</td>
<td>X</td>
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<tr>
<td>MU 334</td>
<td>Music History I</td>
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<td>MU 351A</td>
<td>String Pedagogy I: Violin/Viola.</td>
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<td>MU 351B</td>
<td>String Pedagogy I: Violoncello</td>
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<td></td>
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<td>MU 351C</td>
<td>String Pedagogy I: String Bass</td>
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<tr>
<td>MU 417</td>
<td>Counterpoint</td>
<td>X</td>
<td>3</td>
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<tr>
<td>MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)</td>
<td>X</td>
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<td>MU 318</td>
<td>Arranging and Orchestration</td>
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<td>MU 335</td>
<td>Music History II</td>
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<td>String Pedagogy II: Violin/Viola</td>
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<td>MU 352B</td>
<td>String Pedagogy II: Violoncello</td>
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<td>MU 352C</td>
<td>String Pedagogy II: String Bass</td>
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<tr>
<td>MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)</td>
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<td>MU 451A</td>
<td>String Pedagogy III: Violin</td>
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<td>MU 451B</td>
<td>String Pedagogy III: Violoncello</td>
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<td>MU 451C</td>
<td>String Pedagogy III: String Bass</td>
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<td>MU 472* Applied Music Instruction Upper-Division (See List on Concentration Requirements Tab)</td>
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<td>MU 464A</td>
<td>String Literature: Violin/Viola</td>
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<td>MU 464B</td>
<td>String Literature: Violoncello</td>
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<td>MU 464C</td>
<td>String Literature: String Bass</td>
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<td>MU 471</td>
<td>Recital</td>
<td>X</td>
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</table>
Major in Music (B.M.), Performance Concentration, Voice Option

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Effective Fall 2016

A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Voice Option.

Freshman

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<td>MU 117</td>
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<td>Music Theory II</td>
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<td>4</td>
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<td>MU 131</td>
<td>Introduction to Music History and Literature (GT-AH1)</td>
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<tr>
<td>MU 150</td>
<td>Piano Class I</td>
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<td>MU 172A</td>
<td>Freshman Voice Studio: English/Italian</td>
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<td>MU 172B</td>
<td>Freshman Voice Studio: German, French</td>
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<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
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Sophomore

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<td>LITA *** Foreign Language (Italian)</td>
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<td>MU 217</td>
<td>Music Theory III</td>
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<td>MU 218</td>
<td>Music Theory IV</td>
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<td>MU 272Q³</td>
<td>Applied Music Instruction: Voice</td>
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<td>MU 365A</td>
<td>Advanced Diction: Italian and English</td>
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<td>MU 365B</td>
<td>Advanced Diction: French and German</td>
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<td>MU *** Ensemble²</td>
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<td>Acting for Singers</td>
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<td>Advanced Writing</td>
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Junior

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<tbody>
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</tr>
<tr>
<td>LGER *** Foreign Language (German)</td>
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<td>5</td>
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<tr>
<td>MU 254</td>
<td>Beginning Conducting</td>
<td></td>
<td>2</td>
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<tr>
<td>MU 317</td>
<td>Music Theory V</td>
<td></td>
<td>2</td>
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<tr>
<td>MU 334</td>
<td>Music History I</td>
<td>4A,4B</td>
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<td></td>
<td><strong>Total Credits</strong></td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Program Total Credits: 120
MU 335  Music History II  4A,4B  3
MU 417  Counterpoint  3
MU 471  Recital  1
MU 472Q  Applied Music Instruction: Voice  4
MU *** Ensemble  2

Total Credits  30

Senior

MU 338  Opera History and Literature  2
MU 466  Song Literature  2
MU 467  Vocal Pedagogy  2
MU 471  Recital  4C  1
MU 472Q  Applied Music Instruction: Voice  4
MU *** Ensemble  2

Music Electives  3
Biological and Physical Sciences  3A  3
Global and Cultural Awareness  3E  3
Historical Perspectives  3D  3
Electives  5

Total Credits  30

Program Total Credits:  120

**Ensemble Courses**

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<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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</tr>
<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
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<td>University Orchestra</td>
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<td>MU 304</td>
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<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<td>MU 401</td>
<td>Opera Theater</td>
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<tr>
<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
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<tr>
<td>MU 408</td>
<td>Chamber Music</td>
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</table>

1  Students with previous keyboard experience may test out of MU 150 and use the one credit for an elective.

2  Students must participate in an ensemble during each semester in which they are enrolled in MU 172A-MU 172B, MU 272A-MU 272V, and MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience. MU 401 must be taken prior to or concurrently with TH 352 in the Sophomore year.

3  Take two semesters each during the sophomore, junior, and senior years.

4  Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:** A minimum grade of C is required in all music courses used to satisfy the requirements of the BM in Music, Performance Concentration, Voice Option.
To Declare this Major: Audition with department.

### Freshman

#### Semester 1

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<td>MU 117</td>
<td>Music Theory I</td>
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<td>MU 172A</td>
<td>Freshman Voice Studio: English/Italian</td>
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<tr>
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#### Semester 2

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<td>Introduction to Music History and Literature (GT-AH1)</td>
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<td>MU 172B</td>
<td>Freshman Voice Studio: German, French</td>
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### Sophomore

#### Semester 3

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<tr>
<td>MU 365A</td>
<td>Advanced Diction: Italian and English</td>
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<td>MU 272Q</td>
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<tr>
<td>MU 365B</td>
<td>Advanced Diction: French and German</td>
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<td>TH 352</td>
<td>Acting for Singers</td>
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### Junior

#### Semester 5

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<td>MU 317</td>
<td>Music Theory V</td>
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<td>MU 334</td>
<td>Music History I</td>
<td>X</td>
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<td>MU 417</td>
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<td>MU 472Q</td>
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<td>LFRE***</td>
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<tr>
<td>MU 335</td>
<td>Music History II</td>
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</table>

**Total Credits:** 69

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*Notes:*
- *MU 254* and *MU 317* can be taken in any order.
- *MU 334* can be taken concurrently with *MU 254*.
- *MU 417* and *MU 472Q* are offered in the spring semester.
- *MU 401* must be taken under the Ensemble requirement by the end of semester 4 in order to register for TH 352.
- *MU 335* can be taken concurrently with *MU 334*.
Major in Music (B.A.)

This major allows students to study music within a larger context of a liberal education. In comparison to majors leading to the bachelor of music (B.M.), less emphasis is placed on studies specific to music. In lieu of fewer credits in music, the student completes a 21-credit option in an area outside of music. In addition, completion of a major paper, lecture/recital, or full recital is required during the senior year.

A successful audition is required prior to entrance into this B.A. Music degree program.

Requirements

Effective Fall 2015

A minimum grade of C is required in all music courses used to satisfy the requirements of the major programs (B.A. and B.M.) in music.

Freshman

<table>
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<tr>
<th>Course</th>
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<tr>
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<td>MU 118</td>
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<tr>
<td>MU 131</td>
<td>4</td>
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</table>

Select one group from the following:

Group A:
- MU 172A: Freshman Voice Studio: English/Italian
- MU 172B: Freshman Voice Studio: German, French

Group B:
- Applied Music Instruction (see list below)
- MU *** Ensemble (see list below)

Mathematics

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1. [List of options]
2. [List of options]
### Electives

<table>
<thead>
<tr>
<th>Course Code</th>
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### Sophomore

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<td>MU 218</td>
<td>Music Theory IV</td>
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<tr>
<td>MU 334</td>
<td>Music History I</td>
<td>4A,4B</td>
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<td>MU ***</td>
<td>Ensemble (see list below)</td>
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<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
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<td>Foreign language</td>
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<td>Option³</td>
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**Total Credits**: 29

### Junior

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<tr>
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<td>Music History II</td>
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<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>Historical Perspectives</td>
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<td>Option⁹</td>
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<td>Music Theory, upper-division</td>
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<td>Music Electives⁴</td>
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**Total Credits**: 30

### Senior

Select one from the following:

- MU 471 Recital | 4C
- MU 499 Thesis | 4C
- Biological and Physical Sciences | 3A | 4
- Global and Cultural Awareness | 3E | 3
- Social and Behavioral Sciences | 3C | 3
- Option³ | 9
- Music Electives⁴ | 6
- Elective⁵ | 3

**Total Credits**: 29

**Program Total Credits**: 120

### Applied Music Instruction - Lower-Division

<table>
<thead>
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<tr>
<td>MU 272A</td>
<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
<td>1-2</td>
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<tr>
<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
<td>1-2</td>
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<tr>
<td>MU 272G</td>
<td>Applied Music Instruction: Harpsichord</td>
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<tr>
<td>MU 272H</td>
<td>Applied Music Instruction: Organ</td>
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<tr>
<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
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<tr>
<td>MU 272J</td>
<td>Applied Music Instruction: Percussion</td>
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<tr>
<td>MU 272K</td>
<td>Applied Music Instruction: Guitar</td>
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<td>MU 272L</td>
<td>Applied Music Instruction: Harp</td>
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<tr>
<td>MU 272M</td>
<td>Applied Music Instruction: Harp</td>
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</table>

**Total Credits**: 120
MU 272N  Applied Music Instruction: Viola  1-2
MU 272O  Applied Music Instruction: Violin  1-2
MU 272P  Applied Music Instruction: Violoncello  1-2
MU 272Q  Applied Music Instruction: Voice  1-2
MU 272R  Applied Music Instruction: Bassoon  1-2
MU 272S  Applied Music Instruction: Clarinet  1-2
MU 272T  Applied Music Instruction: Flute  1-2
MU 272U  Applied Music Instruction: Oboe  1-2
MU 272V  Applied Music Instruction: Saxophone (Alto)  1-2

Ensemble Courses

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<td>MU 202</td>
<td>University Chorus</td>
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<tr>
<td>MU 204</td>
<td>Marching Band</td>
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<tr>
<td>MU 205</td>
<td>Concert Band</td>
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<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
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<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
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<tr>
<td>MU 302</td>
<td>University Orchestra</td>
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<td>MU 304</td>
<td>Symphonic Band</td>
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<tr>
<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
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<td>MU 309</td>
<td>Jazz Ensemble</td>
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<td>MU 310</td>
<td>Jazz Combo</td>
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<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
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<td>MU 401</td>
<td>Opera Theater</td>
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<td>Theater/Chamber Orchestra</td>
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<td>MU 407</td>
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<td>MU 408</td>
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1 First-year voice students must take MU 172A and MU 172B (total of four credits), and then take MU 272Q for one credit each semester of the second year (total of two credits); instrumentalists take MU 272A-MU 272P or MU 272R-MU 272V on major instrument for one credit each semester of the first 2 years (total of four credits).
2 Students must participate in an ensemble during each semester in which they are enrolled in MU 172A, MU 172B, MU 272A-MU 272V, MU 472A-MU 472V. At least once during the program of study, this must be achieved by taking MU 408 or through another small ensemble experience.
3 A coherent field of study outside the field of music, including at least 12 upper-division (300- to 400-level) credits.
4 Select from the following: history and literature, theory, composition or orchestration; applied music-performance; maximum of 4 credits in ensemble.
5 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
To declare this major, must audition with department. A grade of C or better is required in all music courses used to satisfy major requirements.

Freshman

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<td>Freshman Voice Studio: English/Italian</td>
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Mathematics

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**Sophomore**

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<td>MU 334</td>
<td>Music History I</td>
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<td>L*** ***</td>
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<td>MU 272*</td>
<td>Applied Music Instruction</td>
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<td>Biological and Physical Sciences</td>
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<td>Upper-Division Music Theory</td>
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<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MU 335</td>
<td>Music History II</td>
<td>X</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>Option Course</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division Music Theory</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MU 334 must be completed by the end of Semester 5.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total Credits</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Critical</th>
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<tbody>
<tr>
<td>MU 335</td>
<td></td>
<td></td>
<td></td>
<td>17</td>
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<tr>
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<td>4</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Music Elective</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>MU 335 must be completed by the end of Semester 6.</td>
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</table>

**Senior**

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MU 335</td>
<td></td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Music Elective</td>
<td></td>
<td></td>
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<td>3</td>
</tr>
</tbody>
</table>
Upper-Division Option Course

Elective

Semester 8

Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 471</td>
<td>Recital</td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>MU 499</td>
<td>Thesis</td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>X</td>
<td>3E</td>
</tr>
<tr>
<td>Music Elective</td>
<td></td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division Option Courses</td>
<td></td>
<td>X</td>
<td>6</td>
</tr>
</tbody>
</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Minor in Music

A performance-based minor in Music enables a student to broaden career opportunities or to pursue a vocational interest.

A successful audition is required prior to entrance into the Music minor program.

Requirements

Effective Fall 2007

A successful audition is required for acceptance into this program.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Select four semesters from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 272A</td>
<td>Applied Music Instruction: Euphonium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272B</td>
<td>Applied Music Instruction: French Horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272C</td>
<td>Applied Music Instruction: Trombone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272D</td>
<td>Applied Music Instruction: Trumpet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272E</td>
<td>Applied Music Instruction: Tuba</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272G</td>
<td>Applied Music Instruction: Harpsichord</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272H</td>
<td>Applied Music Instruction: Organ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272I</td>
<td>Applied Music Instruction: Piano</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272J</td>
<td>Applied Music Instruction: Percussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272K</td>
<td>Applied Music Instruction: Guitar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272L</td>
<td>Applied Music Instruction: Harp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272M</td>
<td>Applied Music Instruction: String Bass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272N</td>
<td>Applied Music Instruction: Viola</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272O</td>
<td>Applied Music Instruction: Violin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272P</td>
<td>Applied Music Instruction: Violoncello</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MU 272Q</td>
<td>Applied Music Instruction: Voice</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Master of Music, Choral Conducting Specialization

Requirements
Effective Spring 2012

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 272R</td>
<td>Applied Music Instruction: Bassoon</td>
<td></td>
</tr>
<tr>
<td>MU 272S</td>
<td>Applied Music Instruction: Clarinet</td>
<td></td>
</tr>
<tr>
<td>MU 272T</td>
<td>Applied Music Instruction: Flute</td>
<td></td>
</tr>
<tr>
<td>MU 272U</td>
<td>Applied Music Instruction: Oboe</td>
<td></td>
</tr>
<tr>
<td>MU 272V</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
<td></td>
</tr>
</tbody>
</table>

Upper Division

| MU *** | Music Ensembles (see list below) | 8 |
| MU *** | Music Electives                 | 4 |

Program Total Credits: 22

Ensemble Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 201</td>
<td>Men's Chorus</td>
<td>1</td>
</tr>
<tr>
<td>MU 202</td>
<td>University Chorus</td>
<td>1</td>
</tr>
<tr>
<td>MU 204</td>
<td>Marching Band</td>
<td>1</td>
</tr>
<tr>
<td>MU 205</td>
<td>Concert Band</td>
<td>1</td>
</tr>
<tr>
<td>MU 206</td>
<td>Colorado State University Concert Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MU 300</td>
<td>Women's Chorus</td>
<td>1</td>
</tr>
<tr>
<td>MU 302</td>
<td>University Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MU 304</td>
<td>Symphonic Band</td>
<td>1</td>
</tr>
<tr>
<td>MU 305</td>
<td>Colorado State University Concert Choir</td>
<td>1</td>
</tr>
<tr>
<td>MU 309</td>
<td>Jazz Ensemble</td>
<td>1</td>
</tr>
<tr>
<td>MU 310</td>
<td>Jazz Combo</td>
<td>1</td>
</tr>
<tr>
<td>MU 400</td>
<td>Colorado State University Chamber Choir</td>
<td>1</td>
</tr>
<tr>
<td>MU 401</td>
<td>Opera Theater</td>
<td>1-2</td>
</tr>
<tr>
<td>MU 402</td>
<td>Theater/Chamber Orchestra</td>
<td>1</td>
</tr>
<tr>
<td>MU 404</td>
<td>Symphonic Wind Ensemble</td>
<td>1</td>
</tr>
<tr>
<td>MU 407</td>
<td>Accompanying</td>
<td>1</td>
</tr>
<tr>
<td>MU 408</td>
<td>Chamber Music</td>
<td>1</td>
</tr>
</tbody>
</table>

Students may opt to test out of MU 111 by successfully passing a waiver examination. In this case, three additional MU elective credits must be taken.

A minimum of 32 credits are required to complete this program.

Master of Music, Collaborative Piano Specialization

Requirements
Effective Spring 2012

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 517</td>
<td>Analytic Techniques I</td>
<td>2</td>
</tr>
<tr>
<td>MU 518</td>
<td>Analytic Techniques II</td>
<td>3</td>
</tr>
<tr>
<td>MU 555</td>
<td>Choral Techniques, Style, and Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>MU 556</td>
<td>Advanced Instrumental Conducting and Techniques</td>
<td>3</td>
</tr>
<tr>
<td>MU 566</td>
<td>Choral Literature-Renaissance and Baroque</td>
<td>2</td>
</tr>
<tr>
<td>MU 567</td>
<td>Choral Literature-1750 to Present</td>
<td>2</td>
</tr>
<tr>
<td>MU 569</td>
<td>Methods of Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MU 671</td>
<td>Graduate Recital</td>
<td>1</td>
</tr>
<tr>
<td>MU 672I</td>
<td>Applied Music Instruction: Piano</td>
<td>12</td>
</tr>
<tr>
<td>MU 696I</td>
<td>Group Study: Performance</td>
<td>2</td>
</tr>
<tr>
<td>MU ***</td>
<td>Music History</td>
<td>3</td>
</tr>
<tr>
<td>MU ***</td>
<td>Music History</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 32

Electives 1,2 5

A minimum of 32 credits are required to complete this program.

1 Students may be advised or required to take additional course work as determined by diagnostic examinations and/or by the student’s graduate committee.

2 Will include both collaborative and solo piano performance.

3 One semester each of chamber music ensemble and choral accompanying.
### Master of Music, Instrumental Conducting Specialization

**Requirements**

**Effective Spring 2012**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 10-13 credits from the following:</td>
<td>10-13</td>
</tr>
<tr>
<td>MU 517</td>
<td>Analytic Techniques I</td>
<td></td>
</tr>
<tr>
<td>MU 518</td>
<td>Analytic Techniques II</td>
<td></td>
</tr>
<tr>
<td>MU 569</td>
<td>Symphonic Literature</td>
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</tr>
</tbody>
</table>

- Music History

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 521</td>
<td>Junior and Senior High School Music</td>
<td></td>
</tr>
<tr>
<td>MU 556</td>
<td>Advanced Instrumental Conducting and Techniques</td>
<td></td>
</tr>
<tr>
<td>MU 695B</td>
<td>Independent Study: Conducting</td>
<td></td>
</tr>
<tr>
<td>MU 696B</td>
<td>Group Study: Conducting</td>
<td></td>
</tr>
<tr>
<td>MU 630</td>
<td>Methods of Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MU 671</td>
<td>Graduate Recital</td>
<td>1</td>
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</tbody>
</table>

Select 0-7 credits from the following:  

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<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MU 672A</td>
<td>Applied Music Instruction: Euphonium</td>
<td></td>
</tr>
<tr>
<td>MU 672B</td>
<td>Applied Music Instruction: French Horn</td>
<td></td>
</tr>
<tr>
<td>MU 672C</td>
<td>Applied Music Instruction: Trombone</td>
<td></td>
</tr>
<tr>
<td>MU 672D</td>
<td>Applied Music Instruction: Trumpet</td>
<td></td>
</tr>
<tr>
<td>MU 672E</td>
<td>Applied Music Instruction: Tuba</td>
<td></td>
</tr>
<tr>
<td>MU 672G</td>
<td>Applied Music Instruction: Harpsichord</td>
<td></td>
</tr>
<tr>
<td>MU 672H</td>
<td>Applied Music Instruction: Organ</td>
<td></td>
</tr>
<tr>
<td>MU 672I</td>
<td>Applied Music Instruction: Piano</td>
<td></td>
</tr>
<tr>
<td>MU 672J</td>
<td>Applied Music Instruction: Percussion</td>
<td></td>
</tr>
<tr>
<td>MU 672K</td>
<td>Applied Music Instruction: Guitar</td>
<td></td>
</tr>
<tr>
<td>MU 672L</td>
<td>Applied Music Instruction: Harp</td>
<td></td>
</tr>
<tr>
<td>MU 672M</td>
<td>Applied Music Instruction: String Bass</td>
<td></td>
</tr>
<tr>
<td>MU 672N</td>
<td>Applied Music Instruction: Viola</td>
<td></td>
</tr>
<tr>
<td>MU 672O</td>
<td>Applied Music Instruction: Violin</td>
<td></td>
</tr>
<tr>
<td>MU 672P</td>
<td>Applied Music Instruction: Violoncello</td>
<td></td>
</tr>
<tr>
<td>MU 672Q</td>
<td>Applied Music Instruction: Voice</td>
<td></td>
</tr>
<tr>
<td>MU 672R</td>
<td>Applied Music Instruction: Bassoon</td>
<td></td>
</tr>
<tr>
<td>MU 672S</td>
<td>Applied Music Instruction: Clarinet</td>
<td></td>
</tr>
<tr>
<td>MU 672T</td>
<td>Applied Music Instruction: Flute</td>
<td></td>
</tr>
<tr>
<td>MU 672U</td>
<td>Applied Music Instruction: Oboe</td>
<td></td>
</tr>
<tr>
<td>MU 672V</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
<td></td>
</tr>
<tr>
<td>MU 696I</td>
<td>Group Study: Performance</td>
<td>0-2</td>
</tr>
<tr>
<td>Electives</td>
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<td>0-5</td>
</tr>
</tbody>
</table>

**Total Credits**

30

A minimum of 30 credits are required to complete this program.

1 Specific courses will be approved by the student’s graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or their graduate committee.

### Master of Music, Music Education Specialization

**Requirements**

**Effective Spring 2012**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 342</td>
<td>Psychology of Music</td>
<td>3</td>
</tr>
<tr>
<td>MU 510</td>
<td>Foundations of Music Education</td>
<td>3</td>
</tr>
<tr>
<td>MU 517</td>
<td>Analytic Techniques I</td>
<td>2-3</td>
</tr>
<tr>
<td>or MU 518</td>
<td>Analytic Techniques II</td>
<td></td>
</tr>
<tr>
<td>MU 520</td>
<td>Elementary School Music</td>
<td>3</td>
</tr>
<tr>
<td>or MU 521</td>
<td>Junior and Senior High School Music</td>
<td></td>
</tr>
<tr>
<td>MU 555</td>
<td>Choral Techniques, Style, and Interpretation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or MU 556</td>
<td>Advanced Instrumental Conducting and Techniques</td>
</tr>
<tr>
<td>MU 630</td>
<td>Methods of Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MU 696I</td>
<td>Group Study: Performance</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Music history</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Music literature</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
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</tr>
</tbody>
</table>

**Total Credits**

30

A minimum of 30 credits are required to complete this program.

2 Select enough elective credits to bring program total to a minimum of 30 credits.

### Master of Music, Music Education—Conducting Specialization

**Requirements**

**Effective Summer 2011**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 510</td>
<td>Foundations of Music Education</td>
<td>3</td>
</tr>
<tr>
<td>MU 518</td>
<td>Analytic Techniques II</td>
<td>3</td>
</tr>
<tr>
<td>MU 527A</td>
<td>Conducting Seminar: Level I</td>
<td>4</td>
</tr>
<tr>
<td>MU 527B</td>
<td>Conducting Seminar: Level 2</td>
<td>4</td>
</tr>
<tr>
<td>MU 527C</td>
<td>Conducting Seminar: Level 3</td>
<td>4</td>
</tr>
<tr>
<td>MU 534</td>
<td>Music of the Romantic Era</td>
<td>3</td>
</tr>
<tr>
<td>MU 630</td>
<td>Methods of Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MU 695B</td>
<td>Independent Study: Conducting</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MU 671</td>
<td>Graduate Recital</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Credits**

30

A minimum of 30 credits are required to complete this program.

1 Specific courses will be approved by the candidate’s graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or their graduate committee.
Master of Music, Music Education—Kodaly Emphasis Option

Requirements
Effective Fall 2011

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 510</td>
<td>Foundations of Music Education</td>
<td>3</td>
</tr>
<tr>
<td>MU 518</td>
<td>Analytic Techniques II</td>
<td>3</td>
</tr>
<tr>
<td>MU 526A</td>
<td>Kodaly Training Program: Level I</td>
<td>5</td>
</tr>
<tr>
<td>MU 526B</td>
<td>Kodaly Training Program: Level II</td>
<td>5</td>
</tr>
<tr>
<td>MU 526C</td>
<td>Kodaly Training Program: Level III</td>
<td>5</td>
</tr>
<tr>
<td>MU 630</td>
<td>Methods of Music Research</td>
<td>3</td>
</tr>
<tr>
<td>Music History</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1 Specific courses will be approved by the student’s graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or by their graduate committee.

2 Electives must be approved in advance by the student’s graduate committee. Workshops will not count as elective credits toward the degree program.

Master of Music, Performance Option

Requirements
Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 518</td>
<td>Analytic Techniques II</td>
<td>3</td>
</tr>
<tr>
<td>MU 630</td>
<td>Methods of Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MU 671</td>
<td>Graduate Recital</td>
<td>1</td>
</tr>
<tr>
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<tr>
<td>MU 672A</td>
<td>Applied Music Instruction: Euphonium</td>
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<tr>
<td>MU 672B</td>
<td>Applied Music Instruction: French Horn</td>
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<tr>
<td>MU 672C</td>
<td>Applied Music Instruction: Trombone</td>
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<tr>
<td>MU 672D</td>
<td>Applied Music Instruction: Trumpet</td>
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</tr>
<tr>
<td>MU 672E</td>
<td>Applied Music Instruction: Tuba</td>
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<tr>
<td>MU 672G</td>
<td>Applied Music Instruction: Harpsichord</td>
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</tr>
<tr>
<td>MU 672H</td>
<td>Applied Music Instruction: Organ</td>
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</tr>
<tr>
<td>MU 672I</td>
<td>Applied Music Instruction: Piano</td>
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</tr>
<tr>
<td>MU 672J</td>
<td>Applied Music Instruction: Percussion</td>
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</tr>
<tr>
<td>MU 672K</td>
<td>Applied Music Instruction: Guitar</td>
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</tr>
<tr>
<td>MU 672L</td>
<td>Applied Music Instruction: Harp</td>
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</tr>
<tr>
<td>MU 672M</td>
<td>Applied Music Instruction: String Bass</td>
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</tr>
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<td>MU 672N</td>
<td>Applied Music Instruction: Viola</td>
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<td>MU 672O</td>
<td>Applied Music Instruction: Violin</td>
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<td>MU 672P</td>
<td>Applied Music Instruction: Violoncello</td>
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<td>MU 672Q</td>
<td>Applied Music Instruction: Voice</td>
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<td>MU 672R</td>
<td>Applied Music Instruction: Bassoon</td>
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<td>MU 672S</td>
<td>Applied Music Instruction: Clarinet</td>
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<td>MU 672T</td>
<td>Applied Music Instruction: Flute</td>
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<td>MU 672U</td>
<td>Applied Music Instruction: Oboe</td>
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<td>MU 672V</td>
<td>Applied Music Instruction: Saxophone (Alto)</td>
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<td>MU 696I</td>
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</table>

A minimum of 32 credits are required to complete this program.

1 Select course(s) with approval of advisor and graduate committee.

2 Majors in vocal performance are required to be proficient in Italian, German, and French singing diction as well as the use of International Phonetic Alphabet upon entering the program, or to take the appropriate coursework to make up deficiency as soon as possible. In addition, they should have academic proficiency in two of the following languages other than English: French, Italian, and German. The level of proficiency for each language must be equal to a grade of “B” or better.

3 Music literature course(s) will be in the student’s major instrument or voice. Course requirements include a paper, copies of which will be distributed to the graduate committee as a sample of the student’s scholarship.

Master of Music, Plan A, Music Therapy Specialization

Requirements
Effective Spring 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>MU 543</td>
<td>Advanced Research Methods in Music Therapy</td>
<td>3</td>
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<tr>
<td>MU 545</td>
<td>Composition for Music Therapy Practitioners</td>
<td>3</td>
</tr>
<tr>
<td>MU 648</td>
<td>Neuroscience/Music Foundations in Therapy</td>
<td>3</td>
</tr>
<tr>
<td>MU 686</td>
<td>Music Therapy Practicum</td>
<td>3</td>
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<tr>
<td>BMS/EDCO/EDRM/PSY/NB Electives</td>
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<td>Music Electives</td>
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<td>MU 699</td>
<td>Thesis</td>
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A minimum of 30 credits are required to complete this program.

1 Specific courses will be approved by the student’s graduate committee. Students may be required to take additional course work as determined by diagnostic examinations and/or their graduate committee.
Master of Music, Plan B, Music Therapy Specialization

Requirements
Effective Spring 2016

<table>
<thead>
<tr>
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<tr>
<td>MU 543</td>
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<td>MU 545</td>
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<td>MU 648</td>
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<td>MU 695G</td>
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<td>Music Electives ¹</td>
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</table>

A minimum of 32 credits are required to complete this program.

¹ Specific courses will be approved by the student’s graduate committee. Students may be required to take additional course work as determined by diagnostic examination and/or their graduate committee.

Concentrations
- Design and Technology Concentration
- Directing Concentration (No new students are being accepted into this concentration.)
- General Theatre Concentration
- Performance Concentration
- Playwriting and Dramatic Literature Concentration (No new students are being accepted into this concentration.)

Major in Theatre, Directing Concentration

No new students are being accepted into the major in Theatre, Directing Concentration. Students interested in this program of study should contact the School of Music, Theatre, and Dance.

Major in Theatre, Performance Concentration

Students whose goal is to earn a Bachelor of Arts degree in Theatre at CSU with a concentration in Performance will be students who have the ability, aptitude, and stamina to pursue a program of study intended to provide rigorous professional training for a career as a performing artist within the context of a liberal arts curriculum, either as a professional actor or as a creative collaborator with the strong interpersonal communication and group problem-solving skills essential to success in the public sector. This course of study will provide student actors with core physical and vocal technique and a variety of approaches to the acting process from which they may glean their own approach to building a character.

This program of study emphasizes both the theoretical and the practical aspects of theatre as an art form and as a commercial industry, and trains well-rounded, responsible theatre artists who value ensemble and collaboration within an artistic community.

Students who complete the Performance concentration will be well prepared to enter the competitive professional field for which they have trained as well-rounded, renaissance artists and technicians. They will learn practical industry skills as well as conceptual techniques and begin to develop an artist’s aesthetic and worldview. Through real-time production experiences, they will learn to think on their feet and adapt to the rapid-paced, high-energy career in the performing arts. Along with their diplomas, students will graduate with the confidence, skills, portfolios, and industry connections they need to pursue professional careers or seek appointments with graduate level programs.

Requirements
# Effective Fall 2016

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
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<td>D 110</td>
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**Total Credits** 31

**Sophomore**

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<td>TH 241</td>
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</tr>
<tr>
<td>TH 242</td>
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<tr>
<td>TH 243</td>
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<td>TH 251</td>
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**Total Credits** 32

**Junior**

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<tr>
<td>TH 350</td>
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<tr>
<td>Select one course from the following:¹</td>
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<tr>
<td>TH 344</td>
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<td>TH 375</td>
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<td>4A</td>
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<td>Select one course from the following:</td>
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<tr>
<td>TH 351</td>
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<td>4A</td>
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<tr>
<td>TH 355</td>
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<td>4A</td>
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<tr>
<td>TH 386</td>
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<td>TH 400²</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
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<td>Historical Perspectives</td>
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**Total Credits** 29

**Senior**

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<td>TH 450¹</td>
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<td>TH 451¹</td>
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<td>TH 471</td>
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¹ Select one course from the following:
² May be repeated.
Addison coursework may be required due to prerequisite.

2 TH 400 should be taken 3 times, 1 credit each course taken.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

**Freshman**

**Semester 1**

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<tr>
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<tbody>
<tr>
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<td>College Composition (GT-CO2)</td>
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<td>TH 150</td>
<td>Introduction to Performance</td>
<td>X</td>
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</tr>
<tr>
<td>TH 186</td>
<td>Theatre Practicum I</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>TH 192</td>
<td>Theatre Freshman Seminar</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>ART 100</td>
<td>Introduction to the Visual Arts (GT-AH1)</td>
<td>3B</td>
<td></td>
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<tr>
<td>D 110</td>
<td>Understanding Dance (GT-AH1)</td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>MU 100</td>
<td>Music Appreciation (GT-AH1)</td>
<td>3B</td>
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Total Credits: 16

**Semester 2**

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<td>TH 151</td>
<td>Acting I</td>
<td>X</td>
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<tr>
<td>TH 161</td>
<td>Technical Theatre: Stagecraft</td>
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<td>Select one course from the following:</td>
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<tr>
<td>ART 100</td>
<td>Introduction to the Visual Arts (GT-AH1)</td>
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<td>Understanding Dance (GT-AH1)</td>
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<td>Music Appreciation (GT-AH1)</td>
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Total Credits: 15

**Sophomore**

**Semester 3**

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<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
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<td>TH 241</td>
<td>Text Analysis for the Theatre</td>
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<td>TH 242</td>
<td>Theatre History I</td>
<td>X</td>
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<tr>
<td>TH 251</td>
<td>Acting II</td>
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<td>Biological and Physical Sciences</td>
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Total Credits: 16

**Semester 4**

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<td>Theatre History II</td>
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<td>TH 250</td>
<td>Voice and Movement for the Stage</td>
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<td>TH 255</td>
<td>Directing Workshop</td>
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<tr>
<td>TH 286</td>
<td>Theatre Practicum II</td>
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<td>Biological and Physical Sciences</td>
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Total Credits: 16
### Junior

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<td>Playwright’s Workshop</td>
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<td>Classical Text</td>
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<tr>
<td>Theatre Production Workshop</td>
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<tr>
<td>Directing Seminar</td>
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<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>TH 400</td>
<td>Theatre Production Workshop</td>
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<td>TH 451</td>
<td>Advanced Topics in Acting</td>
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<td>TH 471</td>
<td>Capstone in Theatre Practice</td>
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<td>Electives</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td>X</td>
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<td>Total Credits</td>
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Program Total Credits: 120

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**Major in Theatre, Playwriting and Dramatic Literature Concentration**

No new students are being accepted into the major in Theatre, Playwriting and Dramatic Literature Concentration. Students interested in this program of study should contact the School of Music, Theatre, and Dance.

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**Department of Philosophy**

Office in Eddy Hall, Room 243
(970) 491-6315
Minors in Philosophy
A minor in Philosophy is intended to broaden students’ education and to complement and encourage critical and constructive reflection in other courses. Students may choose a minor in General Philosophy or in Religious Studies.

Minors
- Minor in General Philosophy
- Minor in Religious Studies

Graduate Programs in Philosophy
The Department of Philosophy offers courses of study that lead to a Master of Arts degree in Philosophy. Master’s students can specialize in applied ethics, particularly animal welfare and environmental ethics; comparative philosophy; ethical theory; history of modern philosophy; metaphysics; aesthetics; or epistemology. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Philosophy. (http://philosophy.colostate.edu)

Master Programs
- Master of Arts in Philosophy, Plan A
- Master of Arts in Philosophy, Plan B

Courses
Philosophy (PHIL)

PHIL 100 Appreciation of Philosophy (GT-AH3) Credits: 3 (3-0-0)
Course Description: Basic issues in philosophy including theories of knowledge, metaphysics, ethics, and aesthetics.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 103 Moral and Social Problems (GT-AH3) Credits: 3 (3-0-0)
Course Description: Contemporary ethical issues in the United States, such as abortion, euthanasia, and genetic engineering.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 104 Values, Culture, and Food Animal Agriculture Credits: 3 (3-0-0)
Also Offered As: ANEQ 104.
Course Description: Evolution of the social values and cultural understandings shaping modern animal agriculture; current problems in animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with freshman or sophomore standing. Credit not allowed for both PHIL 104 and ANEQ 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 110 Logic and Critical Thinking (GT-AH3) Credits: 3 (3-0-0)
Course Description: Identify, analyze, and evaluate real arguments in everyday life, politics, the sciences, and the professions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 112 Reasoning and Problem Solving Credits: 3 (3-0-0)
Course Description: Creative and critical techniques in problem solving and decision making.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 120 History and Philosophy of Scientific Thought (GT-AH3) Credits: 3 (3-0-0)
Course Description: Historical development of western, scientific world view from ancient times to the 20th century.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 130 Bioethics and Society Credits: 2 (2-0-0)
Course Description: Major issues in bioethics.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 170 World Philosophies (GT-AH3)  Credits: 3 (3-0-0)
Course Description: Philosophies of North America, Mesoamerica, West Africa, South Asia, and East Asia.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Ways of Thinking (GT-AH3).

PHIL 171 Religions of the West  Credits: 3 (3-0-0)
Course Description: Major religions of the Near East and West emphasizing their classical development; Judaism, Zoroastrianism, Christianity, Islam.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 172 Religions of the East  Credits: 3 (3-0-0)
Course Description: Major religions of India and the Far East emphasizing their classical development; Hinduism, Buddhism, Confucianism, Taoism.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 173 Philosophy of Traditional Judaism  Credits: 3 (3-0-0)
Course Description: Concepts and essentials of Jewish philosophy and Judaism, including overview of Jewish lifecycle, history, law, literature, ethics, and mysticism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 205 Introduction to Ethics  Credits: 3 (3-0-0)
Course Description: Problems and theories concerning values and standards, right action, and the good life.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 206 Knowledge and Existence-An Introduction  Credits: 3 (3-0-0)
Course Description: Problems and theories concerning knowledge, being, nature of the world.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 210 Introduction to Formal Logic  Credits: 3 (3-0-0)
Course Description: Elementary principles, techniques in propositional and predicate logic.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 211 Philosophy of Science and Method  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in the nature of science.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 210A Philosophy of Language  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in the nature of language.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 212 Ethical Theory  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in ethical theory.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 213 Philosophy of Religion  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in the nature of religious thought.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 214 Philosophy of Social Science  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in the social sciences.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 215 Aesthetics  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in aesthetics.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 216 History of Western Philosophy  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in Western philosophy.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 240 Philosophies of Peace and Nonviolence  Credits: 3 (3-0-0)
Course Description: Classic and contemporary religious and philosophical work on peace and nonviolence.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 270 Issues in the Study of Religion  Credits: 3 (3-0-0)
Course Description: Contemporary religion, its nature, types, forms of expression.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 295 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 297 Group Study  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 300 Ancient Greek Philosophy  Credits: 3 (3-0-0)
Course Description: Philosophy of ancient Greece emphasizing Plato and Aristotle.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 210.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 301 17th and 18th Century European Philosophy  Credits: 3 (3-0-0)
Course Description: Philosophy from the scientific revolution through Kant.
Prerequisite: PHIL 206 or PHIL 210 or PHIL 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 302 19th Century Philosophy  Credits: 3 (3-0-0)
Course Description: Major figures, movements, concepts in Europe and America from about 1800 to early 20th century.
Prerequisite: PHIL 301.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 305A Philosophical Issues in the Professions: Business Ethics  Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to business.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 305B  Philosophical Issues in the Professions: Medical Life Science  Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to medical-life science professions.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 305C  Philosophical Issues in the Professions: Caring Professions  Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories related to caring professions.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PHIL 305D  Philosophical Issues in the Professions: Engineering  Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to engineering.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PHIL 305E  Philosophical Issues in the Professions: Animal Science  Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in animal science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PHIL 305F  Philosophical Issues in the Professions: Information Science  Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in information science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PHIL 305G  Philosophical Issues in the Professions: Research Ethics  Credits: 3 (3-0-0)
Course Description: Philosophical problems, theories relevant to professions in information science.
Prerequisite: None.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 312  Philosophy of Law  Credits: 3 (3-0-0)
Course Description: Philosophical concepts, theories, and problems concerning the law.
Prerequisite: None.
Registration Information: Sophomore standing.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 315  Philosophy of Language  Credits: 3 (3-0-0)
Course Description: Basic concepts and principles in the theory of language.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.
Terms Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PHIL 318  Aesthetics-Visual Arts  Credits: 3 (3-0-0)
Course Description: Central, traditional, and contemporary theories of the nature of visual arts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 320  Ethics of Sustainability  Credits: 3 (3-0-0)
Course Description: Ethical and conceptual issues surrounding creation of sustainable societies and lifestyles.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 325  Philosophy of Natural Science  Credits: 3 (3-0-0)
Course Description: Structure of theories; basic concepts and assumptions; methods of explanation and confirmation; emphasis varies between physical and life sciences.
Prerequisite: PHIL 210.
Registration Information: PHIL 210; one course in natural sciences. May be repeated for credit with consent of department chair.
Terms Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PHIL 327  Philosophy of Behavioral Sciences  Credits: 3 (3-0-0)
Course Description: Structure of theories; basic concepts; explanation and confirmation; reductionism and values; emphasis varies between psychology and social sciences.
Prerequisite: PHIL 120 or PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.
Registration Information: May be repeated for credit with consent of department chair.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 330 Agricultural and Food System Ethics  Credits: 3 (3-0-0)
Also Offered As:  AGRI 330.
Course Description: Basic concepts in ethics and their application to agriculture and the food system.
Prerequisite: CO 150.
Registration Information: Credit not allowed for both PHIL 330 and AGRI 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 335 Islam: Cosmology and Practice  Credits: 3 (3-0-0)
Course Description: Cosmological, spiritual, ritual, and practical aspects of Islam.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 345 Environmental Ethics  Credits: 3 (3-0-0)
Course Description: Scientific, philosophical, and religious concepts of nature as they bear on human conduct; an ecological perspective.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 348 Philosophy of Literature and the Arts  Credits: 3 (3-0-0)
Course Description: Aesthetic and philosophical issues in literature and the arts.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 349 Philosophies of East Asia  Credits: 3 (3-0-0)
Course Description: Philosophical traditions of East Asia, including Confucianism, Daoism, and Zen Buddhism.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 350 Social and Political Philosophy  Credits: 3 (3-0-0)
Course Description: Moral relationships between persons and institutions.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 to 499 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 351 Interpreting the New Testament  Credits: 3 (3-0-0)
Course Description: Contemporary methods of New Testament interpretation.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 353 Feminist Philosophies  Credits: 3 (3-0-0)
Course Description: Conceptual, moral, and social analysis of women's issues from a variety of philosophical feminist perspectives.
Prerequisite: None.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 355 Philosophy of Religion  Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature of religion and structure of meaning in religious discourse.
Prerequisite: PHIL 000 to 99999 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 359 Philosophy of Human Nature  Credits: 3 (3-0-0)
Course Description: Examination of major philosophical topics from ethics, sociopolitical philosophy, metaphysics, aesthetics.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 360 Topics in Asian Philosophy  Credits: 3 (3-0-0)
Course Description: Philosophical problems related to experience of growing old.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 366 Philosophy of Aging  Credits: 3 (3-0-0)
Course Description: Conceptual, moral, and social analysis of women's issues from a variety of philosophical feminist perspectives.
Prerequisite: None.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 367 Contemporary Western Religious Thought  Credits: 3 (3-0-0)
Course Description: Contemporary interpretations of significant Western religious traditions.
Prerequisite: PHIL 106 or PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 371 Contemporary Eastern Religious Thought  Credits: 3 (3-0-0)
Course Description: Transformation of Indian and Chinese religious thought in the modern period.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 372 Meaning and Truth in Religion  Credits: 3 (3-0-0)
Course Description: Conceptual, moral, and social analysis of women's issues from a variety of philosophical feminist perspectives.
Prerequisite: None.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 375  Science and Religion  Credits: 3 (3-0-0)
Course Description: Encounter of religious belief with Western science, influences on each other, present relations.
Prerequisite: PHIL 106 or PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 379  Mysticism East and West  Credits: 3 (3-0-0)
Course Description: Varieties of mystical experience in selected Eastern and Western representatives.
Prerequisite: PHIL 106 or PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 384  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Teaching basic philosophy courses.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all courses.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 407  Phenomenology and Existentialism  Credits: 3 (3-0-0)
Course Description: Methods, epistemology, metaphysics, axiology, ethics of 20th-century phenomenologists and existentialists.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 409  20th Century Philosophy  Credits: 3 (3-0-0)
Course Description: Major figures, trends, and concepts in 20th-century philosophy.
Prerequisite: PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 410  Formal Logic  Credits: 3 (3-0-0)
Course Description: Quantification theory; axiomatic systems; rigorous axiomatization of some logical or mathematical theory.
Prerequisite: PHIL 210 or CS 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 411  Formal Tools in Philosophy  Credits: 3 (3-0-0)
Course Description: Formal methodological tools used in contemporary philosophy. Topics may include modal logic, formal semantics, and decision theory.
Prerequisite: PHIL 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 415  Logic and Scientific Method  Credits: 3 (3-0-0)
Course Description: Approaches to analysis, assessment of scientific inference, problems of induction; applications to natural, behavioral, social sciences.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 425  Epistemology  Credits: 3 (3-0-0)
Course Description: Concepts, problems, and theories of knowledge.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 435  Metaphysics  Credits: 3 (3-0-0)
Course Description: Philosophical problems concerning nature, structure, and basic constituents of reality.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 438  Philosophy of Mind  Credits: 3 (3-0-0)
Course Description: Nature and status of mind, mental states, mental activity; the mind-body problem, mind and human sciences, mind and self, nature of human action.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302 or PHIL 315 or PHIL 325 or PHIL 327 or PHIL 359.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 447  Ethical Theory  Credits: 3 (3-0-0)
Course Description: Fundamental problems and options in ethical theory.
Prerequisite: PHIL 205 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 455  Islamic Philosophy  Credits: 3 (3-0-0)
Course Description: Development of philosophical thought in early, middle, and late Muslim civilization.
Prerequisite: PHIL 206 and PHIL 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 460  Seminar in Great Philosophers  Credits: 3 (3-0-0)
Course Description: Works of one major figure in the history of philosophy.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Registration Information: Maximum of 9 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 461  Seminar in Philosophical Issues and Problems  Credits: 3 (3-0-0)
Course Description: Thorough examination of a major philosophical problem or issue.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 462 Capstone Seminar Credits: 3 (1-0-2)
Course Description: In-depth, integrative study of major topics, texts, and problems in both philosophy and religion.
Prerequisite: PHIL 300 and PHIL 301 or PHIL 300 and PHIL 302 or PHIL 300 and PHIL 409 or PHIL 301 and PHIL 302 or PHIL 301 and PHIL 409 or PHIL 302 and PHIL 409.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Two of the following courses are required: PHIL 300, PHIL 301, PHIL 302, PHIL 409. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 463 Seminar in Religious Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 479 Topics in Comparative Religions Credits: 3 (3-0-0)
Course Description: Comparative study of topics in world religions and philosophy or religion.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Registration Information: PHIL 171 or PHIL 172 or PHIL 270; 300-level religious studies course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 495 Independent Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 497 Group Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 499 Thesis Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 500 Seminar in Major Philosophical Texts Credits: 3 (0-0-3)
Course Description: Intensive study of one or two major works in the history of philosophy.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 501 Seminar: Topics in History of Philosophy Credits: 3 (0-0-3)
Course Description: Selected figures and periods from the history of western philosophy, from ancient to modern. Topics change from semester to semester.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 525 Seminar in Epistemology Credits: 3 (0-0-3)
Course Description: Analysis of contemporary theories of knowledge.
Prerequisite: PHIL 425.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 527 Seminar in Philosophy of Science Credits: 3 (0-0-3)
Course Description: Systematic survey of major 20th-century philosophies of science.
Prerequisite: PHIL 325 or PHIL 327 or PHIL 415.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 535 Seminar in Metaphysics Credits: 3 (0-0-3)
Course Description: Contemporary topics in philosophical metaphysics.
Prerequisite: PHIL 500.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 545 Concept of Natural Value Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature as a value carrier. Types of value associated with nature, their interrelations.
Prerequisite: PHIL 345.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 547 Seminar in Meta-Ethics Credits: 3 (0-0-3)
Course Description: Systematic and historical overview of contemporary theories of meta-ethics.
Prerequisite: PHIL 447.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 548 Seminar in Normative Ethical Theory Credits: 3 (0-0-3)
Course Description: Major topics in contemporary theories of normative ethics.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 550  Ethics and International Development  Credits: 3 (3-0-0)
Also Offered As: IE 550.
Course Description: Ethical reflection applied to development goals, strategies of Third World countries; relations between developed and developing countries.
Prerequisite: None.
Registration Information: Written consent of instructor.
Credit not allowed for both PHIL 550 and IE 550.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 555  Seminar in Philosophical Models of Nature  Credits: 3 (0-0-3)
Course Description: Comparative inquiry into the "nature" of nature as viewed by philosophers of the past and present.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 564  Seminar in Animal Rights  Credits: 3 (0-0-3)
Course Description: Contemporary issues concerning nature and moral status of nonhuman animals.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 565  Seminar in Environmental Philosophy  Credits: 3 (0-0-3)
Course Description: Aesthetic appreciation of nature, duties concerning fauna, flora, endangered species, ecosystem.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 566  Seminar in Applied Philosophy  Credits: 3 (0-0-3)
Course Description: Application of philosophical ideas and methods to analyze practical problems such as distributive justice, abortion, human rights conflicts.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 570  Seminar in Contemporary Philosophical Theory  Credits: 3 (0-0-3)
Course Description: Major concepts and problems in current philosophical theory.
Prerequisite: PHIL 500.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 593  Seminar  Credits: 3 (0-0-3)
Course Description: None.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 601  Master of Profess. Natural Sciences Ethics  Credit: 1 (0-0-1)
Also Offered As: NSCI 601.
Course Description: Ethical issues involving the care and treatment of animals in captive environments. Lectures, case studies, discussions, and student presentations.
Prerequisite: None.
Registration Information: Enrollment in the Master of Professional Natural Sciences program required. Credit not allowed for both PHIL 601 and NSCI 601. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 662  Seminar  Credits: 3 (0-0-3)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 666  Science and Ethics  Credits: 3 (3-0-0)
Also Offered As: CM 666.
Course Description: Ethical issues of research on humans and animals; biosafety; fraud and deception in science; genetic engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PHIL 666 and CM 666.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 684  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 695  Independent Study  Credits: Var[1-9] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 697  Group Study  Credits: Var[1-9] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 698  Research  Credits: Var[1-6] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PHIL 699  Thesis  Credits: Var[1-9]  (0-0-0)
 Course Description:
 Prerequisite: None.
 Restriction: Must be a: Graduate, Professional.
 Terms Offered: Fall, Spring.
 Grade Mode: Instructor Option.
 Special Course Fee: No.

Major in Philosophy

Philosophy is the oldest form of systematic, scholarly inquiry. It is the study of the most basic moral, legal, aesthetic, religious, and metaphysical ideas by which we quest for understanding and develop principles of conduct. Philosophers seek to establish standards of evidence, provide rational methods of conflict resolution, establish criteria for just social orders, and create techniques for evaluating ideas and arguments.

The study of philosophy broadens and intensifies liberal education while enhancing interpretive abilities in many fields. The curriculum encourages a broad liberal arts background, including courses in foreign languages and a plan for graduate school and teaching careers in philosophy. The broad relevance of philosophy to other fields permits most students to work toward goals such as professional training in law, medicine, business, or theology. There are three concentrations available to Philosophy majors: General Philosophy; Philosophy and Religion; and Philosophy, Science and Technology. It is not unusual for philosophy majors to also major in other disciplines, and these concentrations combine easily with other majors in the University.

Learning Outcomes

Philosophy students will:

• Recognize and analyze arguments; reconstruct arguments from major texts in both the history of philosophy and in significant contemporary philosophical work; evaluate these arguments for the validity of argument structures and the truth of premises (soundness); and construct valid and sound arguments of their own in a fashion that is as clear and concise as possible.

• Demonstrate in their senior year knowledge of the works of major figures in the history of philosophy as well as significant current issues from the major sub-disciplines of philosophy, including particularly ethics, metaphysics, and epistemology.

• Demonstrate in their senior year skills in written and oral presentation, engaging in fruitful oral discussion, debate, and formal presentations that are logically coherent, clearly and concisely stated, and accessible to their peers in philosophy.

Potential Occupations

A major in Philosophy prepares students for a wide variety of professional aspirations, including graduate study in philosophy or other disciplines; training in law, computer technology, social work, health care, the ministry, business; and general intellectual flexibility in a changing world. The high level of skill that Philosophy majors acquire in communication, writing, and analytical and critical thinking enables them to secure jobs in a variety of private and public sector professions and to become leaders in their field.

Depending on the major concentration that a student pursues, available career opportunities include, but are not limited to, public policy analyst, business manager, public administrator, computer programmer, intelligence officer, legislator, teacher, foreign diplomat, social worker, community developer, philanthropic organizer, physician, lawyer, researcher, writer, theologian, human resources manager, publisher, and ethics consultant, in a variety of fields, e.g., in medicine, business, law, public administration, non-profit administration, engineering, and the sciences.

Concentrations

• General Philosophy Concentration
• Global Philosophies and Religions Concentration
• Philosophy, Science, and Technology Concentration

Major in Philosophy, General Philosophy Concentration

Requirements

Effective Fall 2016

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

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Total Credits 31
Sophomore

PHIL 205 Introduction to Ethics 3
PHIL 210 Introduction to Formal Logic 3
PHIL*** Philosophy Elective 3
Advanced Writing 2 3
Arts and Humanities 3B 3
Global and Cultural Awareness 3E 3
Electives 13

Total Credits 31

Junior

PHIL 300 Ancient Greek Philosophy 4A 3
PHIL 301 17th and 18th Century European Philosophy 4A 3
Select one course from the following: 3
PHIL 170 World Philosophies (GT-AH3) 3E
PHIL 335 Islam: Cosmology and Practice
PHIL 349 Philosophies of East Asia
PHIL 353 Feminist Philosophies
PHIL 360 Topics in Asian Philosophy
PHIL 455 Islamic Philosophy
PHIL*** Upper-Division Philosophy Elective 3
Electives 18

Total Credits 30

Senior

PHIL 462 Capstone Seminar 4B,4C 3
Select one course from the following: 3
PHIL 315 Philosophy of Language
PHIL 325 Philosophy of Natural Science
PHIL 425 Epistemology
PHIL 435 Metaphysics
PHIL 438 Philosophy of Mind
PHIL*** Upper-Division Philosophy Electives 6
Electives 16

Total Credits 28

Program Total Credits: 120

1. No more than 6 PHIL credits at the 100-level may be applied toward the major.
2. At least 18 PHIL credits must be at the 300-level or above.
3. At least 6 PHIL credits must be at the 400-level.
4. Select enough elective credits to bring the program total to 120, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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### Major in Philosophy, General Philosophy Concentration

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#### Semester 2

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**Sophomore**

#### Semester 3

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<td>Global and Cultural Awareness</td>
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#### Semester 4

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<td>Arts and Humanities</td>
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**Junior**

#### Semester 5

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<td>PHIL 335 Islam: Cosmology and Practice</td>
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<td>PHIL 349 Philosophies of East Asia</td>
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<td>PHIL 360 Topics in Asian Philosophy</td>
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<td>PHIL 455 Islamic Philosophy</td>
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#### Semester 6

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<tr>
<td>PHIL 301 17th and 18th Century European Philosophy</td>
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**Senior**

#### Semester 7

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<td>PHIL 315 Philosophy of Language</td>
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<td>PHIL 325 Philosophy of Natural Science</td>
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<td>PHIL 425 Epistemology</td>
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<td>PHIL 435 Metaphysics</td>
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<td>PHIL 438 Philosophy of Mind</td>
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<td>PHIL*** Philosophy Upper-Division Elective</td>
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<td>Electives</td>
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</table>
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 14

Program Total Credits: 120

Major in Philosophy, Philosophy, Science, and Technology Concentration Requirements

Effective Fall 2016

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

CO 150  College Composition (GT-CO2)  1A  3
PHIL 120  History and Philosophy of Scientific Thought (GT-AH3)  3B  3
Biological and Physical Sciences  3A  7
Historical Perspectives  3D  3
Mathematics  1B  3
PHIL*** Lower-Division Philosophy Elective¹  3
Electives  9
Total Credits 31

Sophomore

PHIL 210  Introduction to Formal Logic  3
Advanced Writing  2  3
Arts and Humanities  3B  3
Global and Cultural Awareness  3E  3
Social and Behavioral Sciences  3C  3
PHIL*** Philosophy Electives²  6
Electives  9
Total Credits 30

Junior

PHIL 300  Ancient Greek Philosophy  4A  3
PHIL 301  17th and 18th Century European Philosophy  4A  3
Select one course from the following:
  PHIL 325  Philosophy of Natural Science  3
  PHIL 327  Philosophy of Behavioral Sciences
PHIL*** Upper-Division Philosophy Elective³  3
Electives  17
Total Credits 29
## Major in Philosophy, Philosophy, Science, and Technology Concentration

### Senior

Select one course from the following: 

<table>
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<tr>
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<td>PHIL 410</td>
<td>Formal Logic</td>
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<td>PHIL 411</td>
<td>Formal Tools in Philosophy</td>
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<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
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<td>PHIL 425</td>
<td>Epistemology</td>
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<td>PHIL 435</td>
<td>Metaphysics</td>
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<tr>
<td>PHIL 438</td>
<td>Philosophy of Mind</td>
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Select one course from the following: 

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<tr>
<td>PHIL 205</td>
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<td>PHIL 305A</td>
<td>Philosophical Issues in the Professions: Business Ethics</td>
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<td>PHIL 305B</td>
<td>Philosophical Issues in the Professions: Medical Life Science</td>
</tr>
<tr>
<td>PHIL 305C</td>
<td>Philosophical Issues in the Professions: Caring Professions</td>
</tr>
<tr>
<td>PHIL 305D</td>
<td>Philosophical Issues in the Professions: Engineering</td>
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<tr>
<td>PHIL 305E</td>
<td>Philosophical Issues in the Professions: Animal Science</td>
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<tr>
<td>PHIL 305F</td>
<td>Philosophical Issues in the Professions: Information Science</td>
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<tr>
<td>PHIL 305G</td>
<td>Philosophical Issues in the Professions: Research Ethics</td>
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<tr>
<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
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<td>PHIL 330</td>
<td>Agricultural and Food System Ethics</td>
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<td>Social and Political Philosophy</td>
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<td>PHIL 447</td>
<td>Ethical Theory</td>
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</table>

**PHIL 462** Capstone Seminar 4B,4C 3

Select enough elective credits to bring the program total to 120, of which at least 42 must be Upper-Division (300- to 400-level).

**Total Credits** 30

**Program Total Credits**: 120

---

1. A maximum of 9 PHIL credit hours at the 100-level may be applied toward the major.
2. A minimum of 18 PHIL credit hours must be at the 300-level or higher.
3. A minimum of 6 PHIL credit hours must be at the 400-level or higher.
4. Select enough elective credits to bring the program total to 120, of which at least 42 must be Upper-Division (300- to 400-level).

## Major Completion Map

### Distinctive Requirements for Degree Program:

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>X</td>
<td>1A</td>
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<td>PHIL 120</td>
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<td>X</td>
<td>3B</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
<td>3</td>
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<td>Mathematics</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
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<tr>
<td>PHIL*** Lower-Division Philosophy Elective</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
<td>4</td>
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<tr>
<td>Historical Perspectives</td>
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<td></td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Electives</td>
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CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.

<table>
<thead>
<tr>
<th>Sophomore</th>
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<tbody>
<tr>
<td><strong>Semester 3</strong></td>
<td><strong>Critical</strong></td>
<td><strong>Recommended</strong></td>
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<tr>
<td>PHIL*** Philosophy Electives</td>
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</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
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<tr>
<td>Social and Behavioral Sciences</td>
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<td>Elective</td>
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<tr>
<th>Junior</th>
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<tr>
<td><strong>Semester 5</strong></td>
<td><strong>Critical</strong></td>
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<tr>
<td>PHIL 300</td>
<td>Ancient Greek Philosophy</td>
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<tr>
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<tr>
<td>PHIL 325</td>
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<td>PHIL 327</td>
<td>Philosophy of Behavioral Sciences</td>
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<td><strong>Semester 7</strong></td>
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<td>Select one course from the following:</td>
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<tr>
<td>PHIL 315</td>
<td>Philosophy of Language</td>
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<tr>
<td>PHIL 410</td>
<td>Formal Logic</td>
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</tr>
<tr>
<td>PHIL 411</td>
<td>Formal Tools in Philosophy</td>
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</tr>
<tr>
<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
<td></td>
</tr>
<tr>
<td>PHIL 425</td>
<td>Epistemology</td>
<td></td>
</tr>
<tr>
<td>PHIL 435</td>
<td>Metaphysics</td>
<td></td>
</tr>
<tr>
<td>PHIL 438</td>
<td>Philosophy of Mind</td>
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<td>Select one course from the following:</td>
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<tr>
<td>PHIL 205</td>
<td>Introduction to Ethics</td>
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<tr>
<td>PHIL 305A</td>
<td>Philosophical Issues in the Professions: Business Ethics</td>
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</tr>
<tr>
<td>PHIL 305B</td>
<td>Philosophical Issues in the Professions: Medical Life Science</td>
<td></td>
</tr>
<tr>
<td>PHIL 305C</td>
<td>Philosophical Issues in the Professions: Caring Professions</td>
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</tr>
<tr>
<td>PHIL 305D</td>
<td>Philosophical Issues in the Professions: Engineering</td>
<td></td>
</tr>
<tr>
<td>PHIL 305E</td>
<td>Philosophical Issues in the Professions: Animal Science</td>
<td></td>
</tr>
<tr>
<td>PHIL 305F</td>
<td>Philosophical Issues in the Professions: Information Science</td>
<td></td>
</tr>
<tr>
<td>PHIL 305G</td>
<td>Philosophical Issues in the Professions: Research Ethics</td>
<td></td>
</tr>
<tr>
<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
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<tr>
<td>PHIL 330</td>
<td>Agricultural and Food System Ethics</td>
<td></td>
</tr>
<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
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</table>
Minor in General Philosophy

Requirements
Effective Fall 1989

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHIL 100</td>
<td>Appreciation of Philosophy (GT-AH3)</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 103</td>
<td>Moral and Social Problems (GT-AH3)</td>
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</tr>
<tr>
<td>PHIL 120</td>
<td>History and Philosophy of Scientific Thought (GT-AH3)</td>
<td></td>
</tr>
<tr>
<td>PHIL 170</td>
<td>World Philosophies (GT-AH3)</td>
<td></td>
</tr>
<tr>
<td>PHIL 205</td>
<td>Introduction to Ethics</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 206</td>
<td>Knowledge and Existence-An Introduction</td>
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<tr>
<td>PHIL 210</td>
<td>Introduction to Formal Logic</td>
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Upper Division

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>PHIL 300</td>
<td>Ancient Greek Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 391</td>
<td>17th and 18th Century European Philosophy</td>
<td>3</td>
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</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHIL 425</td>
<td>Epistemology</td>
<td></td>
</tr>
<tr>
<td>PHIL 435</td>
<td>Metaphysics</td>
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Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHIL 447</td>
<td>Ethical Theory</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 462</td>
<td>Capstone Seminar</td>
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</tbody>
</table>

Total Credits 21

Substitutions allowed with prior approval of department chair.

Minor in Religious Studies

Requirements
Effective Fall 1989

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students are required to receive at least a C- (1.670) in each Philosophy course required for the major or minor in Philosophy. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>PHIL 106</td>
<td>appreciation of philosophy (GT-AH3)</td>
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<tr>
<td>PHIL 171</td>
<td>Religions of the West</td>
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</tr>
<tr>
<td>PHIL 172</td>
<td>Religions of the East</td>
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Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHIL 205</td>
<td>Introduction to Ethics</td>
<td></td>
</tr>
<tr>
<td>PHIL 206</td>
<td>Knowledge and Existence-An Introduction</td>
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<tr>
<td>PHIL 270</td>
<td>Issues in the Study of Religion</td>
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Upper Division

Select one course from the following:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHIL 300</td>
<td>Ancient Greek Philosophy</td>
<td></td>
</tr>
<tr>
<td>PHIL 301</td>
<td>17th and 18th Century European Philosophy</td>
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Select one course from the following:

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<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHIL 349</td>
<td>Philosophies of East Asia</td>
<td></td>
</tr>
<tr>
<td>PHIL 360</td>
<td>Topics in Asian Philosophy</td>
<td></td>
</tr>
<tr>
<td>PHIL 371</td>
<td>Contemporary Eastern Religious Thought</td>
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<tr>
<td>PHIL 379</td>
<td>Mysticism East and West</td>
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Select one course from the following:

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHIL 355</td>
<td>Philosophy of Religion</td>
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</tr>
<tr>
<td>PHIL 370</td>
<td>Contemporary Western Religious Thought</td>
<td></td>
</tr>
<tr>
<td>PHIL 372</td>
<td>Meaning and Truth in Religion</td>
<td></td>
</tr>
<tr>
<td>PHIL 375</td>
<td>Science and Religion</td>
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Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHIL 447</td>
<td>Ethical Theory</td>
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Master of Arts in Philosophy, Plan A

Requirements
Effective Fall 2012

Any courses required to address deficiencies must be completed before graduation. Credits earned through completion of such courses do not count toward the M.A. degree.

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>PHIL 500</td>
<td>Seminar in Major Philosophical Texts</td>
<td>3</td>
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<tr>
<td>PHIL 547</td>
<td>Seminar in Meta-Ethics</td>
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Philosophy Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHIL ***</td>
<td>Philosophy Electives $^{1,2,3,4}$</td>
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Out-of-Department Courses

<table>
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Thesis

<table>
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<tr>
<th>Code</th>
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<tr>
<td>PHIL 699</td>
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Total Credits

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A minimum of 30 credits are required to complete this program.

1. Select courses with PHIL subject code. A minimum of 6 credits must be taken as regular courses (courses ending in -00 through -79) at the 500- to 600-level.
2. Students may select a maximum of 6 credits total within the program at the 400-level with approval of advisor and graduate committee.
3. A maximum of 6 credits may be taken as PHIL 695 and/or PHIL 697.
4. A maximum of 2 credits may be taken as PHIL 684.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.

Master of Arts in Philosophy, Plan B

Requirements
Effective Fall 2012

Any courses required to address deficiencies must be completed before graduation. Credits earned through completion of such courses do not count toward the M.A. degree.

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<td>PHIL 547</td>
<td>Seminar in Meta-Ethics</td>
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Philosophy Electives

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<tbody>
<tr>
<td>PHIL ***</td>
<td>Philosophy Electives $^{1,2,3,4}$</td>
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Out-of-Department Courses

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Thesis

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<tr>
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<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHIL 699</td>
<td>Thesis</td>
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Total Credits

<table>
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<th>Credits</th>
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<tbody>
<tr>
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</table>

A minimum of 33 credits are required to complete this program.

1. Select courses with PHIL subject code. A minimum of 6 credits must be taken as regular courses (courses ending in -00 through -79) at the 500 to 600-level.
2. Students may select a maximum of 6 credits total within the program at the 400-level with approval of advisor and graduate committee.
3. A maximum of 6 credits may be taken as PHIL 695 and/or PHIL 697.
4. A maximum of 2 credits may be taken as PHIL 684.

Students must complete the minimum number of credits specified in the official program of study as approved by the University Curriculum Committee, and all credit requirements specified in the Graduate and Professional Bulletin for their degree.

Department of Political Science

Office in Clark Building, Room C346
(970) 491-5156
polisci.colostate.edu (http://polisci.colostate.edu)

Professor Michele Betsill, Chair

Undergraduate Majors

- Major in Political Science
  - Environmental Politics and Policy Concentration
  - Global Politics and Policy Concentration
  - U.S. Government, Law, and Policy Concentration

Minors

- Minor in Applied Environmental Policy Analysis
- Minor in Political Science

Interdisciplinary Minors

- Environmental Affairs Interdisciplinary Minor
- Latin American and Caribbean Studies Interdisciplinary Minor
- Political Communication Interdisciplinary Minor
Graduate Programs in Political Science

The department offers graduate programs in Political Science leading to the Master of Arts and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Political Science (http://polisci.colostate.edu).

Master Programs

- Master of Art in Political Science, Plan A*
- Master of Art in Political Science, Plan B*

Ph.D.

- Ph.D. in Political Science, Environmental Politics and Policy Specialization*

* Please see department for program of study.

Courses

Political Science (POLS)

POLS 101  American Government and Politics (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Principles, structures, and processes of American national government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

POLS 103  State and Local Government and Politics (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Principles, organization, and operation of American state and local government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

POLS 131  Current World Problems (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Background and nature of international political events.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 232  International Relations (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Basic concepts and approaches to international relations.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 241  Comparative Government and Politics (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Major foreign political systems stressing cross-national comparison of political forces, parties, ideologies, and institutions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 302  U.S. Political Parties and Elections  Credits: 3 (3-0-0)
Course Description: Foundational, institutional, and behavioral features of American political parties and elections.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 303  Politics of Organized Interests  Credits: 3 (3-0-0)
Course Description: Role of interests in varied forms: social movements, institutions, associations, and membership groups in American politics.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 304  Legislative Politics  Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. legislatures.
Prerequisite: POLS 101.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 305  Judicial Politics  Credits: 3 (3-0-0)
Course Description: Allocation of powers among judicial structures in American federal system.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 360  Executive Politics  Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. executive leadership.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 309 Urban Politics Credits: 3 (3-0-0)
Course Description: Governmental structures and political processes in urban government.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 320 Empirical Political Analysis Credits: 3 (3-0-0)
Course Description: Methods of empirical political inquiry.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 321 Empirical Political Analysis Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory applications of empirical research methods.
Prerequisite: None.
Registration Information: Must have concurrent registration in POLS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 331 Politics and Society Along Mexican Border Credits: 3 (3-0-0)
Course Description: Analysis of U.S.-Mexican relations and domestic politics as these affect regional characteristics and development of U.S.-Mexican border region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 332 International Political Economy Credits: 3 (3-0-0)
Also Offered As: ECON 332.
Course Description: Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite: (ECON 202 or AREC 202) and (POLS 232).
Registration Information: Credit not allowed for both POLS 332 and ECON 332.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 341 Western European Government and Politics Credits: 3 (3-0-0)
Course Description: Politics in Western European countries such as Britain, France, and Germany, and countries influenced by European traditions.
Prerequisite: POLS 241.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 345 Russian, Central, and East European Politics Credits: 3 (3-0-0)
Course Description: Political structures and processes in Russia, Central and East Europe, and selected post-Communist countries.
Prerequisite: POLS 241.
Registration Information: Must register for lecture and recitation. Freshman not allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 351 Public Administration Credits: 3 (3-0-0)
Course Description: Government organization and management; decision processes; political and intergovernmental relations in administration.
Prerequisite: POLS 101.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 361 U.S. Environmental Politics and Policy Credits: 3 (3-0-0)
Course Description: Public and contemporary issues relating to U.S. environmental policy.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 362 Global Environmental Politics Credits: 3 (3-0-0)
Course Description: Cross-national and international contexts of environmental politics and policy.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 364 U.S. Energy Policy Analysis Credits: 3 (3-0-0)
Course Description: Discussion and analysis of energy use and its impact on the economy and environment with an emphasis on future policy.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 371 U.S. Space Policy Credits: 3 (3-0-0)
Course Description: Analysis of U.S. space politics, space law, and space policy making.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 405 Race and Ethnicity in U.S. Politics Credits: 3 (3-0-0)
Course Description: Relationships among American racial/ethnic groups, political attitudes, behavior; race and ethnicity roles in elections; implications for public policy.
Prerequisite: POLS 101.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 409 Urban and Regional Politics Credits: 3 (3-0-0)
Course Description: Governance processes and public policies in metropolitan regions.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
POLS 410 American Constitutional Law Credits: 3 (3-0-0)
Course Description: Allocation of powers among structures in American federal system.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 413 U.S. Civil Rights and Liberties Credits: 3 (3-0-0)
Course Description: U.S. Constitutional provisions and cases pertaining to the rights and liberties of individuals.
Prerequisite: POLS 101.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 420 History of Political Thought Credits: 3 (3-0-0)
Course Description: Issues and texts related to tradition of political thought from the ancient through the modern period.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 421 Contemporary Political Theories Credits: 3 (3-0-0)
Course Description: Major political theories and ideologies of contemporary times.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 422 Democratic Theory Credits: 3 (3-0-0)
Course Description: Competing approaches to the theory and practice of democracy, both locally and globally.
Prerequisite: POLS 101.
Registration Information: POLS 101; completion of AUCC category 2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 423 American Political Theories Credits: 3 (3-0-0)
Course Description: Major American theories and ideologies: their development and present uses.
Prerequisite: POLS 101.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 431 International Law Credits: 3 (3-0-0)
Course Description: Rules and obligations for conduct of relations among states and other international entities.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 433 International Organization Credits: 3 (3-0-0)
Course Description: History, development, structure, process, and activity of selected public international organizations.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 434 United States Foreign Policy Credits: 3 (3-0-0)
Course Description: Institutions, responsibilities, processes, and issues in formulation and execution of U.S. foreign policy.
Prerequisite: POLS 232.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 435 Comparative Foreign Policy Credits: 3 (3-0-0)
Course Description: Effect of varying international and domestic contexts on foreign policy choices and outcomes across different countries, cultures, issues, and time.
Prerequisite: POLS 232 and POLS 241.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 437 International Security Credits: 3 (3-0-0)
Course Description: Examines the conditions that make for war and peace in international relations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 444 Comparative African Politics Credits: 3 (3-0-0)
Course Description: African political systems focusing on precolonial, colonial influences; rise of nationalism; approaches to new political order; influences of development.
Prerequisite: POLS 241.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 445 Comparative Asian Politics Credits: 3 (3-0-0)
Course Description: East and South Asian political systems emphasizing issues of development, political culture, and institutional change.
Prerequisite: POLS 241.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 446  Politics of South America  Credits: 3 (3-0-0)
Course Description: South American political actors and institutions with emphasis on themes of development, democracy, revolution, and international affairs.
Prerequisite: POLS 241.
terms Offered: Fall, Spring.
Grade Modes: Traditional. Special Course Fee: No.

POLS 447  Politics in Mexico, Central America, Caribbean  Credits: 3 (3-0-0)
Course Description: Mexican politics with comparison to one or more Central American and Caribbean countries.
Prerequisite: POLS 241.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 448  Comparative Racial/Ethnic Politics  Credits: 3 (3-0-0)
Course Description: Comparative examination of politics of race and ethnicity and role it plays in formation of nation-states.
Prerequisite: POLS 241.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 449  Middle East Politics  Credits: 3 (3-0-0)
Course Description: Political issues of the Middle East, including the Palestinian-Israeli conflict, Islamism, and democratization.
Prerequisite: POLS 241.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 451  Public Policy Design and Governance  Credits: 3 (3-0-0)
Course Description: Examination of governance institutions outside the scope of traditional bureaucratic organizations and accountability.
Prerequisite: POLS 101 or POLS 103.
Registration Information: Junior standing.
terms Offered: Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 452  Globalization, Sustainability, and Justice  Credits: 3 (3-0-0)
Course Description: Public and private policies to promote sustainability and social justice in a globalizing world.
Prerequisite: POLS 232 or POLS 241.
terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional. Special Course Fee: No.

POLS 453  Urban Policy and Management  Credits: 3 (3-0-0)
Course Description: Policy choices and management issues associated with urban government.
Prerequisite: POLS 101 or POLS 103.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 454  Politics in Mexico, Central America, Caribbean  Credits: 3 (3-0-0)
Course Description: Mexican politics with comparison to one or more Central American and Caribbean countries.
Prerequisite: POLS 241.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 456  Public Policy Analysis  Credits: 3 (3-0-0)
Course Description: Methods and tools used in the practice of policy analysis and evaluation of current public policy; emphasis on applied analysis.
Prerequisite: POLS 101.
Registration Information: POLS 101; completion of AUCC category 2; junior standing. Sections may be offered: Online.
terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional. Special Course Fee: No.

POLS 459  Program Evaluation for Public Administrators  Credits: 3 (3-0-0)
Course Description: An overview of research methods and statistical methods for public administrators.
Prerequisite: POLS 101.
Registration Information:Junior or senior standing. Sections may be offered: Online.
terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional. Special Course Fee: No.

POLS 460  Public Policy Process  Credits: 3 (3-0-0)
Course Description: Explanations of U.S. policy formation, implementation, and impact.
Prerequisite: POLS 101.
Registration Information: Junior standing. Sections may be offered: Online.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 462  Globalization, Sustainability, and Justice  Credits: 3 (3-0-0)
Course Description: Public and private policies to promote sustainability and social justice in a globalizing world.
Prerequisite: POLS 232 or POLS 241.
terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional. Special Course Fee: No.

POLS 463  Urban Policy and Management  Credits: 3 (3-0-0)
Course Description: Policy choices and management issues associated with urban government.
Prerequisite: POLS 101 or POLS 103.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.

POLS 465  Public Policy Analysis  Credits: 3 (3-0-0)
Course Description: Methods and tools used in the practice of policy analysis and evaluation of current public policy; emphasis on applied analysis.
Prerequisite: POLS 101.
Registration Information: POLS 101; completion of AUCC category 2; junior standing. Sections may be offered: Online.
terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional. Special Course Fee: No.

POLS 482A  Study Abroad: Politics and Culture in Turkey  Credits: 3 (0-0-3)
Course Description: Politics, history and material culture of Turkey. A study abroad experience.
Prerequisite: POLS 241.
Registration Information: Written consent of instructor. Freshman not allowed.
terms Offered: Summer.
Grade Mode: Traditional. Special Course Fee: No.

POLS 486A  Practicum: Legislative Politics  Credits: 6 (0-8-2)
Course Description: None.
Registration Information: Must register for laboratory and recitation.
terms Offered: Spring.
Grade Mode: Instructor Option. Special Course Fee: Yes.

POLS 486B  Practicum: Government  Credits: Var[1-6] (0-0-0)
Course Description: None.
terms Offered: Spring.
Grade Mode: Instructor Option. Special Course Fee: No.

POLS 492  Capstone Seminar  Credits: 3 (0-0-3)
Course Description: None.
Registration Information: Must have taken upper-division course in at least four subfields of political science.
terms Offered: Fall, Spring.
Grade Mode: Traditional. Special Course Fee: No.
POLS 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 500  Governmental Politics in the U.S.  Credits: 3 (3-0-0)
Course Description: Selected primary source materials on performance of government officials and institutions at federal, state, and local levels.
Prerequisite: None.
Registration Information: Must have taken three upper-division credits in American politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 501  Citizen Politics in the U.S.  Credits: 3 (3-0-0)
Course Description: Selected primary source materials on behavior of individuals and groups in American politics.
Prerequisite: None.
Registration Information: Must have taken three upper-division credits in American politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 509  Gender and the Law  Credits: 3 (3-0-0)
Course Description: Relationship between gender and the law and the changing nature of that relationship over time.
Prerequisite: POLS 410 or POLS 413.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 520  Theories of Political Action  Credits: 3 (3-0-0)
Course Description: Intensive review of primary material on Western political thought.
Prerequisite: POLS 420 or POLS 421.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 530  International Relations  Credits: 3 (3-0-0)
Course Description: Theory and methodology utilized in different approaches to international relations.
Prerequisite: None.
Registration Information: Nine credits in international relations or related studies.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 531  International Security Studies  Credits: 3 (3-0-0)
Course Description: Theories of international security as applied to different issue areas, both traditional and non-traditional.
Prerequisite: None.
Registration Information: Graduate standing. Three upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 532  Governance of the World Political Economy  Credits: 3 (3-0-0)
Course Description: Theoretical and practical debates on the organization and governance of the world political economy.
Prerequisite: None.
Registration Information: Nine upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 540  Comparative Politics  Credits: 3 (3-0-0)
Course Description: Theories, methods, and approaches to study of comparative politics.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 541  Political Economy of Change and Development  Credits: 3 (3-0-0)
Course Description: Responses of the state and its institutions to political, economic, and social change.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 542  Democracy and Democratization  Credits: 3 (3-0-0)
Course Description: Theoretical foundations of democracy and democratization across world regions.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 544  National Identities and Nation Building  Credits: 3 (3-0-0)
Also Offered As: ETST 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both POLS 544 and ETST 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 550  Advanced Public Administration  Credits: 3 (3-0-0)
Course Description: Overview of study of public administration; recent developments in theory and practice.
Prerequisite: POLS 351.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 552A Topics in Public Administration, Personnel Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552B Topics in Public Administration, Budgeting and Finance Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552C Topics in Public Administration, Regulation Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in a professional setting related to political science.
Prerequisite: POLS 500 to 99999 - at least 18 credits.
Registration Information: Graduate standing in Political Science.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

POLS 620 Approaches to the Study of Politics Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 100 to 481 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 621 Qualitative Methods in Political Science Credits: 3 (3-0-0)
Course Description: Research design, data gathering and organization, ethical issues, and computer applications in qualitative political research.
Prerequisite: SOC 311 or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both POLS 621 and SOC 610.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

POLS 624 Scope and Methods of Political Science Credits: 3 (3-0-0)
Course Description: Graduate survey of the scope of the Political Science discipline and the range of research designs and methods used in the discipline.
Prerequisite: POLS 300 to 9999 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 625 Quantitative Methods of Political Research Credits: 3 (3-0-0)
Course Description: Quantitative approaches and methods for study of political life.
Prerequisite: POLS 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 626 Political Research Laboratory Credit: 1 (0-2-0)
Course Description:
Prerequisite: POLS 321.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in POLS 625.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 652 Public Organization Theory Credits: 3 (0-0-3)
Course Description: Theories of behavior of individuals and organizations in government bureaucracies.
Prerequisite: POLS 351.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 660 Theories of the Policy Process Credits: 3 (3-0-0)
Course Description: Recent developments in policy analysis.
Prerequisite: POLS 351 or POLS 460.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 665 Public Policy Analysis Credits: 3 (0-0-3)
Course Description: The practice of policy analysis and the tools used to conduct an analysis including: forecasting, CBA, CEA, and policy design.
Prerequisite: POLS 625.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

POLS 670 Politics of Environment and Sustainability Credits: 3 (3-0-0)
Course Description: Domestic, international, and comparative dimensions of environment and natural resource politics and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One year of graduate work.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
POLS 692  Seminar in Environmental Policy  Credits: 3 (0-0-3)
Course Description: Topics in domestic and/or global environmental policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 709  Environmental Politics in the U.S.  Credits: 3 (3-0-0)
Course Description: Selected primary materials on governmental performance, groups, and mass public in American environmental politics.
Prerequisite: (POLS 500 or POLS 501) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 729  Political Theory and the Environment  Credits: 3 (3-0-0)
Course Description: Political thought applied to questions of the environment.
Prerequisite: POLS 520 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 739  International Environmental Politics  Credits: 3 (3-0-0)
Course Description: Theories and methodologies used in analyzing international environmental politics and policy.
Prerequisite: POLS 530 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 749  Comparative Environmental Politics  Credits: 3 (3-0-0)
Course Description: Application of comparative political theory to analysis of environmental politics.
Prerequisite: (POLS 540 or POLS 541) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 759  Environmental Policy and Administration  Credits: 3 (3-0-0)
Course Description: Effects of regulation, intergovernmental relations, and resource availability on federal environmental programs in U.S.
Prerequisite: POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Political Science

Political science is the study of politics and political action in society. It encompasses international agreements and organizations as well as the patterns of political action which both create and shape them. It encompasses citizen action and the institutions which produce public policy at the local, state, and national levels within the United States. It encompasses systems of voting, political parties, courts, compared across national political systems. It encompasses the raising of normative questions about the nature and purposes of political life. The presence of politics is felt in all areas and sectors of society at all times. The dynamic and transformative effects of political action are seen virtually everywhere.

The department’s curriculum is distributed across five subfields of the discipline: American politics, political theory, comparative politics, international relations, and public policy. Political Science major coursework across the subfields of the discipline is complemented by the requirement that each Political Science major completes a designated support option, which includes: a minor in another department, an interdisciplinary minor, the second language support option, the methods support option, or a second major.

Learning Outcomes

Students majoring in Political Science shall demonstrate the following:

- Ability to reason through political claims and assertions by political actors
- Skill in recognizing and responding to diverse ideological perspectives
- Ability to locate political issues and controversies within their relevant institutional and historical contexts
- Familiarity with the institutional processes of politics in numerous global and domestic political arenas
- Confidence in expressing opinions and presenting analyses of political problems and their solutions.
Potential Occupations

The Political Science major, like all studies in the liberal arts, provides students with a broad academic background that is serviceable across a broad spectrum of employment in the public and private sectors. Political Science majors are trained to be independent and critical thinkers; to be discerning and active observers and listeners; to communicate persuasively; to constructively engage and solve intellectual and practical problems; to adapt and function effectively in a number of distinct occupational and institutional settings; to function comfortably in a multiethnic, multiracial, and globalizing society. The employment profiles of departmental alumni attest to the breadth of possibilities for today’s graduates: public and non-profit organization managers, prosecutors, public policy analysts and consultants, federal law enforcement agents, legislators and legislative analysts, foreign service officers, private attorneys, demographers, criminal investigators, advertising specialists, urban/regional planners, environmental policy analysts, state budget analysts, public relations representatives, market researchers, elementary and high school teachers, international businessmen and businesswomen, lobbyists, novelists, construction industry managers, insurance agents and managers, financiers, and real estate brokers. Some graduates join professions following advanced study in law, international relations, area studies, public administration, public policy analysis, and business management.

Concentrations

Students may complete the general Political Science major or select one of the following concentrations for a more specialized course of study.

- Environmental Politics and Policy Concentration
- Global Politics and Policy Concentration
- U.S. Government, Law, and Policy Concentration

Requirements

Effective Fall 2016

Political science majors must achieve a minimum grade of C- (1.670) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Political Science, Upper-Division

At least 24 credits of upper-division political science courses must be completed for the major. The 24 credits include the senior capstone course, POLS 492, at least 3 credits of AUCC 4A and 4B in addition to POLS 492, and at least one upper-division course in each of the following five subfields.\(^1\)

<table>
<thead>
<tr>
<th>American Politics and Law</th>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>POLS 302</td>
<td>U.S. Political Parties and Elections</td>
<td>4A,4B</td>
<td>3</td>
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<td>POLS 303</td>
<td>Politics of Organized Interests</td>
<td>4A,4B</td>
<td>3</td>
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<td>POLS 304</td>
<td>Legislative Politics</td>
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<td>POLS 309</td>
<td>Urban Politics</td>
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<tr>
<td>POLS 405</td>
<td>Race and Ethnicity in U.S. Politics</td>
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<td>POLS 409</td>
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<td>POLS 410</td>
<td>American Constitutional Law</td>
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<td>POLS 413</td>
<td>U.S. Civil Rights and Liberties</td>
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<td>Contemporary Political Theories</td>
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<td>POLS 423</td>
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<td>POLS 332/ECON 332</td>
<td>International Political Economy</td>
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<td>POLS 362</td>
<td>Global Environmental Politics</td>
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<td>POLS 431</td>
<td>International Law</td>
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<td>POLS 433</td>
<td>International Organization</td>
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<td>POLS 435</td>
<td>United States Foreign Policy</td>
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Major in Political Science

POLS 436 Comparative Foreign Policy 3
POLS 437 International Security 3

Comparative Politics

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<tr>
<td>POLS 341</td>
<td>Western European Government and Politics</td>
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<td>3</td>
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<tr>
<td>POLS 345</td>
<td>Russian, Central, and East European Politics</td>
<td></td>
<td>3</td>
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<td>POLS 442</td>
<td>Environmental Politics in Developing World</td>
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<td>POLS 443</td>
<td>Comparative Social Movements</td>
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<td>POLS 444</td>
<td>Comparative African Politics</td>
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<td>POLS 445</td>
<td>Comparative Asian Politics</td>
<td></td>
<td>3</td>
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<tr>
<td>POLS 446</td>
<td>Politics of South America</td>
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<td>POLS 447</td>
<td>Politics in Mexico, Central America, Caribbean</td>
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<tr>
<td>POLS 448</td>
<td>Comparative Racial/Ethnic Politics</td>
<td>4A,4B</td>
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<td>POLS 449</td>
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Public Policy and Administration

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<tr>
<td>POLS 351</td>
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<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
<td>3</td>
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<td>POLS 364</td>
<td>U.S. Energy Policy Analysis</td>
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<tr>
<td>POLS 451</td>
<td>Public Policy Design and Governance</td>
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<tr>
<td>POLS 459</td>
<td>Program Evaluation for Public Administrators</td>
<td>3</td>
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<td>POLS 460</td>
<td>Public Policy Process</td>
<td>3</td>
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<tr>
<td>POLS 462</td>
<td>Globalization, Sustainability, and Justice</td>
<td>3</td>
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<tr>
<td>POLS 463</td>
<td>Urban Policy and Management</td>
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<tr>
<td>POLS 465</td>
<td>Public Policy Analysis</td>
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</table>

Other Possible Elective Courses Under the 24-Credit Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>POLS 320</td>
<td>Empirical Political Analysis</td>
<td>3</td>
</tr>
<tr>
<td>POLS 486A</td>
<td>Practicum: Legislative Politics</td>
<td>6</td>
</tr>
<tr>
<td>POLS 486B</td>
<td>Practicum: Government</td>
<td>1-6</td>
</tr>
<tr>
<td>POLS 5**</td>
<td>Selected graduate course</td>
<td></td>
</tr>
</tbody>
</table>

Support Options

Political Science majors must complete one of the following five Support Options.

Minor or Interdisciplinary Minor Support Option

Select a minor or interdisciplinary minor in consultation with advisor. 21-24

Student-Selected Course Group Support Option

A program of courses proposed by student and approved by advisor containing a minimum of 21 credits, of which at least 12 must be upper-division (300- to 400-level). 21

Second Major Support Option

Select a second major in consultation with advisor. This option may require as much as 36 credits. Credit range shown is approximate, and may require more or less, depending on the second major chosen. 27-36
### Foreign Language Support Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A minimum of 5 courses totaling at least 15 credits in a single foreign</td>
<td>15-22</td>
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<tr>
<td></td>
<td>language, including at least 2 courses of language instruction or in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the language at the upper-division level.</td>
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### Methods Support Option

<table>
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<tr>
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<th>Title</th>
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<tr>
<td></td>
<td>Methods Support Option</td>
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<tr>
<td>POLS 320</td>
<td>Empirical Political Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
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<tr>
<td></td>
<td>Select two from the following:</td>
<td>6</td>
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<tr>
<td>PHIL 120</td>
<td>History and Philosophy of Scientific Thought (GT-AH3)</td>
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<tr>
<td>PHIL 327</td>
<td>Philosophy of Behavioral Sciences</td>
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<tr>
<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
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<tr>
<td></td>
<td>Select one from the following:</td>
<td>3</td>
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<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
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<tr>
<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
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<tr>
<td>STAT 350</td>
<td>Design of Experiments</td>
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<td>Select two from the following:</td>
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<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
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<td>AREC 335/ECON 335</td>
<td>Introduction to Econometrics</td>
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<tr>
<td>SOC 210</td>
<td>Quantitative Sociological Analysis</td>
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<td>SOC 311</td>
<td>Methods of Sociological Inquiry</td>
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### Freshman

<table>
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<th>Code</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 103</td>
<td>State and Local Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td></td>
<td>Mathematics</td>
<td>1B</td>
<td>3</td>
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<tr>
<td></td>
<td>Electives</td>
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<td>Total Credits</td>
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### Sophomore

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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>2</td>
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<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td>2</td>
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<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>2</td>
<td></td>
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<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CO 302</td>
<td>Writing in Digital Environments (GT-CO3)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td>2</td>
<td></td>
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<tr>
<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
<td>3E</td>
<td>3</td>
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<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td>3E</td>
<td>3</td>
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<td></td>
<td>Biological Physical Sciences</td>
<td>3A</td>
<td>3</td>
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<tr>
<td></td>
<td>Political Science, upper-division (See list above)</td>
<td>3</td>
<td>3-6</td>
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<td>Support Option (See list above)</td>
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<td>Total Credits</td>
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<td>30-33</td>
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</table>
Major in Political Science

Junior

Political Science - AUCC 4A and/or 4B (See Upper-Division list above)\(^5\)  
Political Science, upper-division (See list above)\(^4\)  
Support Option (See list above)  
Electives  

Total Credits  

Senior

POLS 492\(^6\) Capstone Seminar  
Political Science - AUCC 4A and/or 4B (See Upper-Division list above)\(^5\)  
Political Science, upper-division (See list above)\(^4\)  
Support Option (See list above)  
Electives\(^7\)  

Total Credits  

Program Total Credits:  

---

1. Students choosing the Methods Support Option must take POLS 320. Credits earned in POLS 495 may not be used to satisfy this requirement.  
2. A maximum of 3 credits of POLS 486A or POLS 486B may count toward the 24-credit upper-division requirement.  
3. Students may select a 500-level POLS graduate course with approval of advisor and the instructor to fulfill a maximum of 3 credits of the 24-credit upper-division requirement.  
4. Select a minimum of 24 upper-division (300- to 400-level) courses as described above in the Political Science, Upper-Division list.  
5. In addition to POLS 492 students must select at least one course from among the courses listed in the five subfields (see Political Science, Upper-Division list above), for a minimum of 3 credits, that meets the AUCC 4A/4B requirement for the major.  
6. Students must have completed upper division courses in at least four of the five subfields (see Political Science, Upper-Division list above) in order to enroll in POLS 492.  
7. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

**Distinctive Requirements for Degree Program:**  
Grade of B and C or better in 2 POLS courses and at least 2.000 CSU GPA. Upper-Division course in at least four subfields of political science required to register for POLS 492.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<tbody>
<tr>
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<td>College Composition (GT-CO2)</td>
<td>1A</td>
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<tr>
<td>POLS 101</td>
<td></td>
<td>American Government and Politics (GT-SS1)</td>
<td>X</td>
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<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
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<td>Biological and Physical Sciences</td>
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<tr>
<td>Elective</td>
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<tbody>
<tr>
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<td>X</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
<td>3</td>
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<td>Historical Perspectives</td>
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<td>3D</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td>X</td>
<td>1B</td>
</tr>
<tr>
<td>Elective</td>
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<td>CO 150 must be completed by the end of Semester 2.</td>
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**Sophomore**

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<tr>
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<td>International Relations (GT-SS1)</td>
<td>X</td>
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<td>Course Title</td>
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<td>Recommended</td>
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<td>----------</td>
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<tr>
<td>4</td>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
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</tr>
<tr>
<td>4</td>
<td>CO 302</td>
<td>Writing in Digital Environments (GT-CO3)</td>
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<td>4</td>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
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<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
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<td>3E</td>
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<td>Upper-Division</td>
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<td>Electives</td>
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<td>Upper-Division</td>
<td>3-6</td>
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<td>Electives</td>
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<td>3-6</td>
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<td>POLS 492</td>
<td>Capstone Seminar</td>
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<td>4A,4B,4C</td>
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<td>Upper-Division</td>
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<td>8</td>
<td>Support Option</td>
<td>(See option list on Program Requirements Tab)</td>
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<tr>
<td>8</td>
<td>Electives</td>
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<td>X</td>
<td>0-6</td>
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</tbody>
</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.
Major in Political Science, Environmental Politics and Policy Concentration

The Department’s Environmental Politics and Policy concentration is designed to help students develop the knowledge and skills to analyze the connections between politics and the natural world and pursue careers in environmental politics and policy-making. Graduates may work as policy analysts, advocates, planners, educators or decision-makers in government agencies, non-profit organizations, businesses and consulting firms at the local, state, national and international levels. Students will learn about how political forces contribute to environmental degradation, the process for developing environmental policies, strategies to assess the strengths and weaknesses of different policy approaches, and how political forces can be harnessed to develop effective responses to problems such as climate change, water and air pollution, food security, and energy provision. Students will explore these issues from both domestic and global perspectives. Environmental Politics and Policy students are strongly encouraged to complete an internship to gain practical experience working in the field.

Requirements

Effective Fall 2016

Political science majors must achieve a minimum grade of C- (1.670) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

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<thead>
<tr>
<th>Freshman</th>
<th>AUCC</th>
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<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>POLS 101 American Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 103 State and Local Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
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</tr>
<tr>
<td>Historical Perspectives</td>
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<tr>
<td>Mathematics</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>5</td>
</tr>
<tr>
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<td></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Sophomore

Select one course from the following: 3

<table>
<thead>
<tr>
<th>Tier Four: Select one from the following:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 300 Writing Arguments (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301B Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301D Writing in the Disciplines: Education (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 302 Writing in Digital Environments (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>LB 300 Specialized Professional Writing</td>
<td>2</td>
</tr>
<tr>
<td>POLS 232 International Relations (GT-SS1)</td>
<td>3E</td>
</tr>
<tr>
<td>POLS 241 Comparative Government and Politics (GT-SS1)</td>
<td>3E</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
</tr>
</tbody>
</table>

Junior

Tier Two: Select one from the following: 3

<table>
<thead>
<tr>
<th>Tier Three (300-level courses only; see list below)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 361 U.S. Environmental Politics and Policy</td>
<td></td>
</tr>
<tr>
<td>POLS 362 Global Environmental Politics</td>
<td></td>
</tr>
<tr>
<td>POLS 364 U.S. Energy Policy Analysis</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
</tr>
</tbody>
</table>

Tier Two: Select one from the following: 3

| Biological and Physical Sciences | 3A | 3 |
| Support Option (See list below) | 3-6 |
| Electives | 12 |

Tier Four: Select one from the following: 3

| Biological and Physical Sciences | 3A | 3 |
| Support Option (See list below) | 3-6 |
| Electives | 12 |
**Environmental Politics and Policy Concentration Tier Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TIER ONE COURSES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 credits, four courses taken in the freshman and sophomore years as shown above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 103</td>
<td>State and Local Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td><strong>TIER TWO COURSES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 credits, one course taken in the junior year, as shown above</td>
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<td></td>
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<tr>
<td>POLS 420</td>
<td>History of Political Thought</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 421</td>
<td>Contemporary Political Theories</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 422</td>
<td>Democratic Theory</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 423</td>
<td>American Political Theories</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td><strong>TIER THREE COURSES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 6 unique credits, two courses, one each from among two different subfields of the three subfields below, taken in the sophomore, junior and/or senior years</td>
<td></td>
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</tr>
<tr>
<td><strong>American Politics and Law</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLS 302</td>
<td>U.S. Political Parties and Elections</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 303</td>
<td>Politics of Organized Interests</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>POLS 304</td>
<td>Legislative Politics</td>
<td></td>
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<tr>
<td>POLS 305</td>
<td>Judicial Politics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 306</td>
<td>Executive Politics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 309</td>
<td>Urban Politics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 405</td>
<td>Race and Ethnicity in U.S. Politics</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 409</td>
<td>Urban and Regional Politics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 410</td>
<td>American Constitutional Law</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 413</td>
<td>U.S. Civil Rights and Liberties</td>
<td></td>
<td>3</td>
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</table>

**International Relations**
### Major in Political Science, Environmental Politics and Policy Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 331</td>
<td>Politics and Society Along Mexican Border</td>
<td>3</td>
</tr>
<tr>
<td>POLS 332/ECON 332</td>
<td>International Political Economy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 362</td>
<td>Global Environmental Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 431</td>
<td>International Law</td>
<td>3</td>
</tr>
<tr>
<td>POLS 433</td>
<td>International Organization</td>
<td>3</td>
</tr>
<tr>
<td>POLS 435</td>
<td>United States Foreign Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 436</td>
<td>Comparative Foreign Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 437</td>
<td>International Security</td>
<td>3</td>
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</table>

#### Comparative Politics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 341</td>
<td>Western European Government and Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 345</td>
<td>Russian, Central, and East European Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 442</td>
<td>Environmental Politics in Developing World</td>
<td>3</td>
</tr>
<tr>
<td>POLS 443</td>
<td>Comparative Social Movements</td>
<td>3</td>
</tr>
<tr>
<td>POLS 444</td>
<td>Comparative African Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 445</td>
<td>Comparative Asian Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 446</td>
<td>Politics of South America</td>
<td>3</td>
</tr>
<tr>
<td>POLS 447</td>
<td>Politics in Mexico, Central America, Caribbean</td>
<td>3</td>
</tr>
<tr>
<td>POLS 448</td>
<td>Comparative Racial/Ethnic Politics</td>
<td>4, 4B</td>
</tr>
<tr>
<td>POLS 449</td>
<td>Middle East Politics</td>
<td>4, 4B</td>
</tr>
</tbody>
</table>

#### TIER FOUR COURSES

Select 12 unique credits, four courses taken in the sophomore, junior and/or senior years.¹ ²

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 362</td>
<td>Global Environmental Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 364</td>
<td>U.S. Energy Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>POLS 442</td>
<td>Environmental Politics in Developing World</td>
<td>3</td>
</tr>
<tr>
<td>POLS 459</td>
<td>Program Evaluation for Public Administrators</td>
<td>3</td>
</tr>
<tr>
<td>POLS 460</td>
<td>Public Policy Process</td>
<td>3</td>
</tr>
<tr>
<td>POLS 462</td>
<td>Globalization, Sustainability, and Justice</td>
<td>3</td>
</tr>
<tr>
<td>POLS 463</td>
<td>Urban Policy and Management</td>
<td>3</td>
</tr>
<tr>
<td>POLS 465</td>
<td>Public Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>POLS 486A</td>
<td>Practicum: Legislative Politics ⁶</td>
<td>6</td>
</tr>
<tr>
<td>POLS 486B</td>
<td>Practicum: Government ⁶</td>
<td>1-6</td>
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</table>

One of the following courses may be substituted for 3 credits of the 12 required for Tier Four:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREC 340/ECON 340</td>
<td>Introduction: Economics of Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>HIST 351</td>
<td>American West to 1900</td>
<td>3</td>
</tr>
<tr>
<td>HIST 352</td>
<td>American West Since 1900</td>
<td>3</td>
</tr>
<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 470</td>
<td>World Environmental History, 1500-Present</td>
<td>3</td>
</tr>
<tr>
<td>HIST 476</td>
<td>History of America’s National Parks</td>
<td>3</td>
</tr>
<tr>
<td>SOC 320</td>
<td>Population-Natural Resources and Environment</td>
<td>3</td>
</tr>
</tbody>
</table>
### SOC 321
Soil, Environment, and Society
3

### SOC 322
Introduction to Environmental Justice
3

### SOC 364
Agriculture and Global Society
3

### SOC 460
Society and Environment
3

### SOC 463
Sociology of Disaster
3

### TIER FIVE COURSE
3 credits, one course taken in the senior year

### POLS 492
Capstone Seminar 5 4A,4B,4C
3

#### Support Option
Political Science majors must complete one of the following five Support Options.

### Minor or Interdisciplinary Minor Support Option
Select a minor or interdisciplinary minor in consultation with advisor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>21-24</td>
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</tbody>
</table>

### Student-Selected Course Group Support Option
A program of courses proposed by student and approved by advisor containing a minimum of 21 credits, of which at least 12 must be upper-division (300- to 400-level).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

### Second Major Support Option
Select a second major in consultation with advisor. This option may require as much as 36 credits. Credit range shown is approximate, and may require more or less, depending on the second major chosen.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>27-36</td>
</tr>
</tbody>
</table>

### Foreign Language Support Option
A minimum of 5 courses totaling at least 15 credits in a single foreign language, including at least 2 courses of language instruction or in the language at the upper-division level.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>15-22</td>
</tr>
</tbody>
</table>

### Methods Support Option
Select a minimum of 12 upper-division (300- to 400-level) credits to fulfill Tier Four. Sophomores may take only 300-level courses from this section. Students may substitute a maximum of 3 credits in one of two ways: 1. from non-POLS specified courses shown above in the program; 2. by petitioning the advisor to include a non-POLS upper-division course when at least fifty percent (50%) of the course material and grading are related to environmental politics and policy. A course syllabus will be required for this option.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>21</td>
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</tbody>
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Select two from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>POLS 320</td>
<td>Empirical Political Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 120</td>
<td>History and Philosophy of Scientific Thought (GT-AH3)</td>
<td></td>
</tr>
<tr>
<td>PHIL 327</td>
<td>Philosophy of Behavioral Sciences</td>
<td></td>
</tr>
<tr>
<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
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</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
<td></td>
</tr>
<tr>
<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
<td></td>
</tr>
<tr>
<td>STAT 350</td>
<td>Design of Experiments</td>
<td></td>
</tr>
</tbody>
</table>

Select two from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
<td></td>
</tr>
<tr>
<td>AREC 335/ECON 335</td>
<td>Introduction to Econometrics</td>
<td></td>
</tr>
<tr>
<td>SOC 210</td>
<td>Quantitative Sociological Analysis</td>
<td></td>
</tr>
<tr>
<td>SOC 311</td>
<td>Methods of Sociological Inquiry</td>
<td></td>
</tr>
</tbody>
</table>

1. Select a minimum of 12 upper-division (300- to 400-level) credits to fulfill Tier Four. Sophomores may take only 300-level courses from this section. Students may substitute a maximum of 3 credits in one of two ways: 1. from non-POLS specified courses shown above in the program; 2. by petitioning the advisor to include a non-POLS upper-division course when at least fifty percent (50%) of the course material and grading are related to environmental politics and policy. A course syllabus will be required for this option.

2. Courses selected to fulfill Tier Three requirements may not also fulfill Tier Four requirements, and vice versa.

3. Sophomores may take only 300-level Tier Three courses.
Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Students must complete one upper-division course in each of four of the five departmental subfields (American Politics, Political Theory, International Relations, Comparative Politics, and Public Policy and Administration) prior to taking POLS 492.

A maximum of 3 credits of POLS 486A or POLS 486B may be used to fulfill Tier Four requirements, subject to department approval.

## Major Completion Map

### Distinctive Requirements for Degree Program:

Grade of B and C or better in 2 POLS courses and at least a 2.000 CSU GPA. Upper-Division course in at least four subfields of Political Science required to register for POLS 492.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td></td>
<td></td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>POLS 101 American Government and Politics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>X</td>
<td>3B</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
<td>4</td>
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CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>POLS 232 International Relations (GT-SS1)</td>
<td>X</td>
<td>3E</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>POLS 241 Comparative Government and Politics (GT-SS1)</td>
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<td>3E</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>X</td>
<td>3A</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Support Option (See option list on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3-6</td>
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<tr>
<td>Tier Three (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>Elective</td>
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<td>0-3</td>
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<tr>
<td>Total Credits</td>
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<td>15</td>
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</table>

### Select one course from the following:

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<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 300 Writing Arguments (GT-CO3)</td>
<td></td>
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<td>2</td>
</tr>
<tr>
<td>CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
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<td></td>
<td>2</td>
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<tr>
<td>CO 301B Writing in the Disciplines: Sciences (GT-CO3)</td>
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<tr>
<td>CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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</tr>
<tr>
<td>CO 301D Writing in the Disciplines: Education (GT-CO3)</td>
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<td></td>
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<tr>
<td>CO 302 Writing in Digital Environments (GT-CO3)</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
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<td></td>
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</tr>
<tr>
<td>LB 300 Specialized Professional Writing</td>
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### Tier Four: Select one course from the following:

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>3</td>
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<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>9-12</td>
</tr>
</tbody>
</table>

Total Credits 15
### Major in Political Science, Global Politics and Policy Concentration

The Department's Global Politics and Policy concentration is designed to help students develop the knowledge and skills to analyze political relationships between and within countries and to pursue careers in international affairs (http://www.apsia.org/career-guide) (such as working for government agencies, intergovernmental organizations, international businesses, consulting firms or non-profit organizations in the U.S. and abroad). Students will learn about different systems of government, state-society relations in various parts of the world, the ways that public and private actors interact through international institutions and the global economy, as well as the causes of and responses to domestic and international conflict. Global Politics and Policy students are strongly encouraged to study a foreign language (http://languages.colostate.edu) and to complete some of their coursework in one of CSU’s many study abroad programs (http://educationabroad.colostate.edu/students).

### Requirements

#### Effective Fall 2016

Political science majors must achieve a minimum grade of C- (1.670) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>POLS 101</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 103</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
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<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Mathematics</td>
<td>1B</td>
<td>3</td>
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<tr>
<td>Electives</td>
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</table>

Total Credits: 30
Sophomore

Select one course from the following: 3

- CO 300 Writing Arguments (GT-CO3) 2
- CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3) 2
- CO 301B Writing in the Disciplines: Sciences (GT-CO3) 2
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3) 2
- CO 301D Writing in the Disciplines: Education (GT-CO3) 2
- CO 302 Writing in Digital Environments (GT-CO3) 2
- JTC 300 Professional and Technical Communication (GT-CO3) 2
- LB 300 Specialized Professional Writing 2
- POLS 232 International Relations (GT-SS1) 3E 3
- POLS 241 Comparative Government and Politics (GT-SS1) 3E 3

Tier Four: Select one course from the following:1,2

- POLS 331 Politics and Society Along Mexican Border 3
- POLS 332/ECON 332 International Political Economy 3
- POLS 341 Western European Government and Politics 3
- POLS 345 Russian, Central, and East European Politics 3
- POLS 362 Global Environmental Politics 3
- POLS *** Tier Three (300-level courses only; see list below)2,3 0-3
- Biological and Physical Sciences 3A 3
- Support Option (see list below) 3-6
- Electives 12

Total Credits 30-33

Junior

Tier Two: Select one course from the following: 3

- POLS 420 History of Political Thought 4A,4B
- POLS 421 Contemporary Political Theories 4A,4B
- POLS 422 Democratic Theory 4A,4B
- POLS 423 American Political Theories 4A,4B
- POLS *** Tier Three (course not taken previously; see list below)2,3 3-6
- POLS *** Tier Four (course not taken previously; see list below)1,2 3-6
- Support Option (see list below) 6-12
- Electives 4 3-12

Total Credits 27-30

Senior

Tier Four (courses not taken previously; see list below)1,2 3-6

- POLS 492 (Tier Five)5 Capstone Seminar 4A,4B,4C 3
- Support Option (see list below) 6-12
- Electives 4 3-12

Total Credits 27-30

Program Total Credits: 120

Global Politics and Policy Concentration Tier Requirements

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
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</table>

**TIER ONE COURSES**

12 credits, four courses taken in the freshman and sophomore years as shown above
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Subfield</th>
<th>Credits</th>
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<tbody>
<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td></td>
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<td>POLS 103</td>
<td>State and Local Government and Politics (GT-SS1)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td></td>
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</table>

**TIER TWO COURSES**

3 credits, one course taken in the junior year, as shown above

<table>
<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>POLS 420</td>
<td>History of Political Thought</td>
<td>3</td>
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<tr>
<td>POLS 421</td>
<td>Contemporary Political Theories</td>
<td>3</td>
</tr>
<tr>
<td>POLS 422</td>
<td>Democratic Theory</td>
<td>3</td>
</tr>
<tr>
<td>POLS 423</td>
<td>American Political Theories</td>
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**TIER THREE COURSES**

Select 6 unique credits, two courses, one from each of the two different subfields below, taken in the sophomore, junior and/or senior years

**American Politics and Law**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>POLS 302</td>
<td>U.S. Political Parties and Elections</td>
<td>3</td>
</tr>
<tr>
<td>POLS 303</td>
<td>Politics of Organized Interests</td>
<td>3</td>
</tr>
<tr>
<td>POLS 304</td>
<td>Legislative Politics</td>
<td>3</td>
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<tr>
<td>POLS 305</td>
<td>Judicial Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 306</td>
<td>Executive Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 309</td>
<td>Urban Politics</td>
<td>3</td>
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<tr>
<td>POLS 405</td>
<td>Race and Ethnicity in U.S. Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 409</td>
<td>Urban and Regional Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 410</td>
<td>American Constitutional Law</td>
<td>3</td>
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<tr>
<td>POLS 413</td>
<td>U.S. Civil Rights and Liberties</td>
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</table>

**Public Policy and Administration**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>POLS 351</td>
<td>Public Administration</td>
<td>3</td>
</tr>
<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
<td>3</td>
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<td>POLS 364</td>
<td>U.S. Energy Policy Analysis</td>
<td>3</td>
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<tr>
<td>POLS 451</td>
<td>Public Policy Design and Governance</td>
<td>3</td>
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<tr>
<td>POLS 459</td>
<td>Program Evaluation for Public Administrators</td>
<td>3</td>
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<tr>
<td>POLS 460</td>
<td>Public Policy Process</td>
<td>3</td>
</tr>
<tr>
<td>POLS 462</td>
<td>Globalization, Sustainability, and Justice</td>
<td>3</td>
</tr>
<tr>
<td>POLS 463</td>
<td>Urban Policy and Management</td>
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<tr>
<td>POLS 465</td>
<td>Public Policy Analysis</td>
<td>3</td>
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**TIER FOUR COURSES**

Select 12 unique credits, with at least one course from each of the first two subfields below, taken in the sophomore, junior and/or senior years

**International Relations**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>POLS 331</td>
<td>Politics and Society Along Mexican Border</td>
<td>3</td>
</tr>
<tr>
<td>POLS 332/ECON 332</td>
<td>International Political Economy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 362</td>
<td>Global Environmental Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 431</td>
<td>International Law</td>
<td>3</td>
</tr>
<tr>
<td>POLS 433</td>
<td>International Organization</td>
<td>3</td>
</tr>
<tr>
<td>POLS 435</td>
<td>United States Foreign Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 436</td>
<td>Comparative Foreign Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 437</td>
<td>International Security</td>
<td>3</td>
</tr>
</tbody>
</table>
Comparative Politics

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 341</td>
<td>Western European Government and Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 345</td>
<td>Russian, Central, and East European Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 442</td>
<td>Environmental Politics in Developing World</td>
<td>3</td>
</tr>
<tr>
<td>POLS 443</td>
<td>Comparative Social Movements</td>
<td>3</td>
</tr>
<tr>
<td>POLS 444</td>
<td>Comparative African Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 445</td>
<td>Comparative Asian Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 446</td>
<td>Politics of South America</td>
<td>3</td>
</tr>
<tr>
<td>POLS 447</td>
<td>Politics in Mexico, Central America, Caribbean</td>
<td>3</td>
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<tr>
<td>POLS 448</td>
<td>Comparative Racial/Ethnic Politics</td>
<td>3</td>
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<tr>
<td>POLS 449</td>
<td>Middle East Politics</td>
<td>3</td>
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</table>

Practicum

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>POLS 486A</td>
<td>Practicum: Legislative Politics</td>
<td>6</td>
</tr>
<tr>
<td>POLS 486B</td>
<td>Practicum: Government</td>
<td>1-6</td>
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</tbody>
</table>

TIER FIVE COURSES

3 credits, one course taken in the senior year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 492</td>
<td>Capstone Seminar</td>
<td>4A,4B,4C</td>
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</table>

Support Option

Political Science majors must complete one of the following five Support Options.

**Minor or Interdisciplinary Minor Support Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>Select a minor or interdisciplinary</td>
<td>21-24</td>
</tr>
<tr>
<td></td>
<td>minor in consultation with advisor.</td>
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</tbody>
</table>

**Student-Selected Course Group Support Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A program of courses proposed by student and approved by advisor</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>containing a minimum of 21 credits, of which at least 12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>must be upper-division (300- to 400-level).</td>
<td></td>
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</table>

**Second Major Support Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Select a second major in consultation with advisor. This option may</td>
<td>27-36</td>
</tr>
<tr>
<td></td>
<td>require as much as 36 credits. Credit range shown is approximate,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and may require more or less, depending on the second major chosen.</td>
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</table>

**Foreign Language Support Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>A minimum of 5 courses totaling at least 15 credits in a single</td>
<td>15-22</td>
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<tr>
<td></td>
<td>foreign language, including at least 2 courses of language</td>
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</tr>
<tr>
<td></td>
<td>instruction or in the language at the upper-division level.</td>
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</table>

**Methods Support Option**

<table>
<thead>
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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>Methods Course Option</td>
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<tr>
<td>POLS 320</td>
<td>Empirical Political Analysis</td>
<td>3</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
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<tr>
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<td>Select two from the following:</td>
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<tr>
<td>PHIL 120</td>
<td>History and Philosophy of Scientific Thought (GT-AH3)</td>
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<tr>
<td>PHIL 327</td>
<td>Philosophy of Behavioral Sciences</td>
<td></td>
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<tr>
<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
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<td>Select one from the following:</td>
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<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
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<tr>
<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
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</tbody>
</table>
Select two from the following: 6

ANTH 441 Method in Cultural Anthropology
AREC 335/ECON 335 Introduction to Econometrics
SOC 210 Quantitative Sociological Analysis
SOC 311 Methods of Sociological Inquiry

1. Select a minimum of 12 upper-division (300- to 400-level) credits to fulfill Tier Four. Sophomores may take only 300-level courses from this section.
2. Courses selected to fulfill Tier Three requirements may not also fulfill Tier Four requirements, and vice versa.
3. Sophomores may take only 300-level Tier Three courses.
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
5. Students must complete one upper-division course in each of four of the five departmental subfields (American Politics, Political Theory, International Relations, Comparative Politics, and Public Policy and Administration) prior to taking POLS 492.
6. A maximum of 3 credits of POLS 486A or POLS 486B may be used to fulfill Tier Four requirements, subject to department approval.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Grade of B and C or better in 2 POLS courses and at least 2.000 CSU GPA. Upper-Division course in at least four subfields of political science required to register for POLS 492.

### Freshman

#### Semester 1

<table>
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<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
</tr>
<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>Elective</td>
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<td>3</td>
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<tr>
<td><strong>Total Credits</strong></td>
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#### Semester 2

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<tr>
<td>POLS 103</td>
<td>State and Local Government and Politics (GT-SS1)</td>
<td>X</td>
<td>3C</td>
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<tr>
<td></td>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
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<tr>
<td></td>
<td>Historical Perspectives</td>
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<td>3D</td>
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<tr>
<td></td>
<td>Mathematics</td>
<td></td>
<td>X</td>
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<tr>
<td>Elective</td>
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<tr>
<td>CO 150 must be completed by the end of Semester 2.</td>
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<td><strong>Total Credits</strong></td>
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### Sophomore

#### Semester 3

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<tr>
<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
<td>X</td>
<td>3E</td>
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<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td>X</td>
<td>3E</td>
</tr>
<tr>
<td></td>
<td>Biological and Physical Sciences</td>
<td>X</td>
<td>3A</td>
</tr>
<tr>
<td>Support Option (See option list on Concentration Requirements Tab)</td>
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<tr>
<td>Tier Three (See Department list on Concentration Requirements Tab)</td>
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<td></td>
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<tr>
<td>Elective</td>
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<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
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<td><strong>15-18</strong></td>
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#### Semester 4

Select one course from the following: 3

<table>
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<th>Recommended</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>X</td>
<td>2</td>
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<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>X</td>
<td>2</td>
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</tbody>
</table>
Major in Political Science, U.S. Government, Law and Policy Concentration

The Department's U.S. Government, Law, and Policy concentration is designed to prepare students to become future leaders in the public sector. The skills gained in this concentration help prepare students for a variety of careers (for example, government agencies, nonprofits, community organizations, lobbying firms, elected office, political communication, research and policy analysts) as well as prepare students for law and graduate schools. Resources for careers include the American Political Science Association (http://www.apsanet.org/careersinpoliticalscience) and the Network of Schools of Public Policy, Affairs, and Administration (http://www.naspaa.org/students/careers/joblinks.asp). The courses in this concentration educate students about the political processes and the legal environment of all levels of American government as well as the processes of policymaking and the administrative apparatus used to implement public policy. Students will

<table>
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<tr>
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<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
<td>X 2</td>
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<tr>
<td>CO 302</td>
<td>Writing in Digital Environments (GT-CO3)</td>
<td>X 2</td>
</tr>
<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td>X 2</td>
</tr>
<tr>
<td>LB 300</td>
<td>Specialized Professional Writing</td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

- POLS 331 Politics and Society Along Mexican Border
- POLS 332/ECON 332 International Political Economy
- POLS 341 Western European Government and Politics
- POLS 345 Russian, Central, and East European Politics
- POLS 362 Global Environmental Politics

Electives

<table>
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<tr>
<th>Total Credits</th>
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<tbody>
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<td>15</td>
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Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Tier Three (See Department list on Concentration Requirements Tab)</td>
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<td></td>
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</tr>
<tr>
<td>Tier Four (See Department list on Concentration Requirements Tab)</td>
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<td>3-6</td>
</tr>
<tr>
<td>Support Option (See option list on Concentration Requirements Tab)</td>
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<td>3-6</td>
</tr>
<tr>
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<table>
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<td>12-15</td>
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<table>
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<td>Select one course from the following:</td>
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<tr>
<td>POLS 420 History of Political Thought</td>
<td></td>
<td></td>
<td></td>
<td>4A,4B</td>
</tr>
<tr>
<td>POLS 421 Contemporary Political Theories</td>
<td></td>
<td></td>
<td></td>
<td>4A,4B</td>
</tr>
<tr>
<td>POLS 422 Democratic Theory</td>
<td></td>
<td></td>
<td></td>
<td>4A,4B</td>
</tr>
<tr>
<td>POLS 423 American Political Theories</td>
<td></td>
<td></td>
<td></td>
<td>4A,4B</td>
</tr>
<tr>
<td>Support Option (See option list on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>Electives</td>
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</table>

<table>
<thead>
<tr>
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<tr>
<td>12-15</td>
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</table>

Senior

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier Four (See Department list on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>Support Option (See option list on Concentration Requirements Tab)</td>
<td></td>
<td></td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
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<table>
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<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 492 Capstone Seminar</td>
<td>X</td>
<td></td>
<td>4A,4B,4C</td>
<td>3</td>
</tr>
<tr>
<td>Support Option (See option list on Concentration Requirements Tab)</td>
<td>X</td>
<td></td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>0-9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-15</td>
</tr>
</tbody>
</table>

Program Total Credits: 120

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.
also be exposed to a variety of substantive policy issues including urban policy, energy policy, and environmental policy in the United States. U.S. Government, Law, and Public Policy students are strongly encouraged to complete an internship in one of the many organizations in the broader community. Past students have completed internships with a variety of law firms (http://polisci.colostate.edu/undergraduate/pre-law), the Cities of Fort Collins, Windsor, Loveland, and Westminster, the Colorado General Assembly, and Woodward Governor among others. Students in this concentration are also encouraged to participate in the Legislative Internship Program (http://polisci.colostate.edu/undergraduate/legislative-internship) during their junior or senior years.

Requirements

Effective Fall 2016

Political science majors must achieve a minimum grade of C- (1.670) in each of the political science (POLS) courses counted toward meeting the requirement of the major.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>POLS 101 American Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 103 State and Local Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
</tbody>
</table>

Arts and Humanities

- 3B

Biological and Physical Sciences

- 3A

Historical Perspectives

- 3D

Mathematics

- 1B

Electives

- 5

Total Credits 30

Sophomore

Select one course from the following:

- CO 300 Writing Arguments (GT-CO3) 2
- CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3) 2
- CO 301B Writing in the Disciplines: Sciences (GT-CO3) 2
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3) 2
- CO 301D Writing in the Disciplines: Education (GT-CO3) 2
- CO 302 Writing in Digital Environments (GT-CO3) 2
- JTC 300 Professional and Technical Communication (GT-CO3) 2
- LB 300 Specialized Professional Writing 2
- POLS 232 International Relations (GT-SS1) 3E 3
- POLS 241 Comparative Government and Politics (GT-SS1) 3E 3

Tier Four: Select one course from the following (see list below)1,2

- POLS 302 U.S. Political Parties and Elections 4A,4B
- POLS 303 Politics of Organized Interests 4A,4B
- POLS 304 Legislative Politics
- POLS 305 Judicial Politics
- POLS 306 Executive Politics
- POLS 309 Urban Politics
- POLS 351 Public Administration
- POLS 361 U.S. Environmental Politics and Policy
- POLS 364 U.S. Energy Policy Analysis

POLS 3** Tier Three (300-level courses only; see list below)2,3

Biological and Physical Sciences

- 3A 3

Support Option (see list below)

- 3-6

Electives

- 12

Total Credits 30-33
## Major in Political Science, U.S. Government, Law and Policy Concentration

### Junior

Tier Two: Select one course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 420</td>
<td>History of Political Thought</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 421</td>
<td>Contemporary Political Theories</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>POLS 422</td>
<td>Democratic Theory</td>
<td>4A,4B</td>
<td></td>
</tr>
<tr>
<td>POLS 423</td>
<td>American Political Theories</td>
<td>4A,4B</td>
<td></td>
</tr>
</tbody>
</table>

POLS *** Tier Three (courses not taken previously; see list below)²,³ 3-6

POLS *** Tier Four (courses not taken previously; see list below)¹,² 3-6

Support Option (see list below) 6-12

Electives⁴ 3-12

Total Credits 27-30

### Senior

POLS *** Tier Four (courses not taken previously; see list below)¹,² 3-6

POLS 492 (Tier Five)⁵ Capstone Seminar 4A,4B,4C 3

Support Option (see list below) 6-12

Electives⁴ 3-12

Total Credits 27-30

Program Total Credits: 120

## U.S. Government, Law, and Policy Concentration Tier Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>TIER ONE COURSES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 credits, four courses taken in the freshman and sophomore years as shown above</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 103</td>
<td>State and Local Government and Politics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td>3E</td>
<td>3</td>
</tr>
</tbody>
</table>

|        | **TIER TWO COURSES**                        |      |         |
|        | 3 credits, one course taken in the junior year, as shown above |      |         |
| POLS 420 | History of Political Thought               | 4A,4B | 3       |
| POLS 421 | Contemporary Political Theories             | 4A,4B | 3       |
| POLS 422 | Democratic Theory                           | 4A,4B | 3       |
| POLS 423 | American Political Theories                 | 4A,4B | 3       |

|        | **TIER THREE COURSES**                      |      |         |
|        | Select 6 unique credits, one course from each of the two different subfields below, taken in the sophomore, junior and/or senior years²,³ |      |         |

**International Relations**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>POLS 331</td>
<td>Politics and Society Along Mexican Border</td>
<td>3</td>
</tr>
<tr>
<td>POLS 332/ECON 332</td>
<td>International Political Economy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 362</td>
<td>Global Environmental Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 431</td>
<td>International Law</td>
<td>3</td>
</tr>
<tr>
<td>POLS 433</td>
<td>International Organization</td>
<td>3</td>
</tr>
<tr>
<td>POLS 435</td>
<td>United States Foreign Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 436</td>
<td>Comparative Foreign Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 437</td>
<td>International Security</td>
<td>3</td>
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</table>
### Comparative Politics

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 341</td>
<td>Western European Government and Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 345</td>
<td>Russian, Central, and East European Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 442</td>
<td>Environmental Politics in Developing World</td>
<td>3</td>
</tr>
<tr>
<td>POLS 443</td>
<td>Comparative Social Movements</td>
<td>3</td>
</tr>
<tr>
<td>POLS 444</td>
<td>Comparative African Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 445</td>
<td>Comparative Asian Politics</td>
<td>3</td>
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<tr>
<td>POLS 446</td>
<td>Politics of South America</td>
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</tr>
<tr>
<td>POLS 447</td>
<td>Politics in Mexico, Central America, Caribbean</td>
<td>3</td>
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<tr>
<td>POLS 448</td>
<td>Comparative Racial/Ethnic Politics 4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 449</td>
<td>Middle East Politics 4A,4B</td>
<td>3</td>
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#### TIER FOUR COURSES

Select 12 unique credits, with at least one course from each of the first two subfields below, taken in the sophomore, junior and/or senior years.

#### American Politics and Law

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 302</td>
<td>U.S. Political Parties and Elections 4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 303</td>
<td>Politics of Organized Interests 4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 304</td>
<td>Legislative Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 305</td>
<td>Judicial Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 306</td>
<td>Executive Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 309</td>
<td>Urban Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 405</td>
<td>Race and Ethnicity in U.S. Politics 4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>POLS 409</td>
<td>Urban and Regional Politics</td>
<td>3</td>
</tr>
<tr>
<td>POLS 410</td>
<td>American Constitutional Law</td>
<td>3</td>
</tr>
<tr>
<td>POLS 413</td>
<td>U.S. Civil Rights and Liberties</td>
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#### Public Policy and Administration

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>POLS 351</td>
<td>Public Administration</td>
<td>3</td>
</tr>
<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
<td>3</td>
</tr>
<tr>
<td>POLS 364</td>
<td>U.S. Energy Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>POLS 451</td>
<td>Public Policy Design and Governance</td>
<td>3</td>
</tr>
<tr>
<td>POLS 459</td>
<td>Program Evaluation for Public Administrators</td>
<td>3</td>
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<td>POLS 460</td>
<td>Public Policy Process</td>
<td>3</td>
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<tr>
<td>POLS 462</td>
<td>Globalization, Sustainability, and Justice</td>
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<td>POLS 463</td>
<td>Urban Policy and Management</td>
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<td>POLS 465</td>
<td>Public Policy Analysis</td>
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#### Practicum

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<tbody>
<tr>
<td>POLS 486A</td>
<td>Practicum: Legislative Politics 6</td>
<td>6</td>
</tr>
<tr>
<td>POLS 486B</td>
<td>Practicum: Government 6</td>
<td>1-6</td>
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</tbody>
</table>

#### TIER FIVE COURSE

3 credits, one course taken in the senior year.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>POLS 492</td>
<td>Capstone Seminar 4A,4B,4C</td>
<td>3</td>
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</tbody>
</table>

#### Support Option

Political Science majors must complete one of the following five Support Options.
Minor or Interdisciplinary Minor Support Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select a minor or interdisciplinary minor in consultation with advisor.</td>
<td>21-24</td>
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</tbody>
</table>

Student-Selected Course Group Support Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A program of courses proposed by student and approved by advisor containing a minimum of 21 credits, of which at least 12 must be upper-division (300- to 400-level).</td>
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</table>

Second Major Support Option

<table>
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</thead>
<tbody>
<tr>
<td></td>
<td>Select a second major in consultation with advisor. This option may require as much as 36 credits. Credit range shown is approximate, and may require more or less, depending on the second major chosen.</td>
<td>27-36</td>
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</tbody>
</table>

Foreign Language Support Option

<table>
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<tr>
<th>Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A minimum of 5 courses totaling at least 15 credits in a single foreign language, including at least 2 courses of language instruction or in the language at the upper-division level.</td>
<td>15-22</td>
</tr>
</tbody>
</table>

Methods Support Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Methods Support Option</td>
<td>21</td>
</tr>
<tr>
<td>POLS 320</td>
<td>Empirical Political Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select two from the following:</td>
<td>6</td>
</tr>
<tr>
<td>PHIL 120</td>
<td>History and Philosophy of Scientific Thought (GT-AH3)</td>
<td></td>
</tr>
<tr>
<td>PHIL 327</td>
<td>Philosophy of Behavioral Sciences</td>
<td></td>
</tr>
<tr>
<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
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<tr>
<td></td>
<td>Select one from the following:</td>
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</tr>
<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
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<tr>
<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
<td></td>
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<tr>
<td>STAT 350</td>
<td>Design of Experiments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select two from the following:</td>
<td>6</td>
</tr>
<tr>
<td>ANTH 441</td>
<td>Method in Cultural Anthropology</td>
<td></td>
</tr>
<tr>
<td>AREC 335/ECON 335</td>
<td>Introduction to Econometrics</td>
<td></td>
</tr>
<tr>
<td>SOC 210</td>
<td>Quantitative Sociological Analysis</td>
<td></td>
</tr>
<tr>
<td>SOC 311</td>
<td>Methods of Sociological Inquiry</td>
<td></td>
</tr>
</tbody>
</table>

1. Select a minimum of 12 upper-division (300- to 400-level) credits to fulfill Tier Four. Sophomores may take only 300-level courses from this section.
2. Courses selected to fulfill Tier Three requirements may not also fulfill Tier Four requirements, and vice versa.
3. Sophomores may take only 300-level Tier Three courses.
4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
5. Students must complete one upper-division course in each of four of the five departmental subfields (American Politics, Political Theory, International Relations, Comparative Politics, and Public Policy and Administration) prior to taking POLS 492.
6. A maximum of 3 credits of POLS 486A or POLS 486B may be used to fulfill Tier Four requirements, subject to department approval.

Major Completion Map

Distinctive Requirements for Degree Program:
Grade of B and C or better in 2 POLS courses and at least 2.000 CSU GPA. Upper-Division course in at least four subfields of political science required to register for POLS 492.

Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>Semester 2</td>
<td>Critical</td>
<td>Recommended</td>
<td>AUCC</td>
<td>Credits</td>
</tr>
<tr>
<td>-----------</td>
<td>----------</td>
<td>-------------</td>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>POLS 103</td>
<td>X</td>
<td>3C</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>X</td>
<td>1B</td>
<td></td>
<td>3</td>
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</tbody>
</table>

CO 150 must be completed by the end of Semester 2.

Total Credits 15

**Sophomore**

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 232</td>
<td>X</td>
<td>3E</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>POLS 3** Tier Three (See Department list on Concentration Requirements Tab)</td>
<td></td>
<td>0-3</td>
<td></td>
<td></td>
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<tr>
<td>Support Option (See option list on Concentration Requirements Tab)</td>
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<td>3-6</td>
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<tr>
<td>Electives</td>
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</table>

Total Credits 15-18

**Semester 4**

Select one course from the following:

<table>
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<tr>
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<th>Credits</th>
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<tr>
<td>CO 300</td>
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<td>CO 301A</td>
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<td>3</td>
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<tr>
<td>CO 301B</td>
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<td>3</td>
</tr>
<tr>
<td>CO 301C</td>
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<tr>
<td>CO 301D</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>CO 302</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>JTC 300</td>
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<td>LB 300</td>
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<tr>
<td>POLS 241</td>
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Select one course from the following:

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<th>Credits</th>
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<tr>
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<tr>
<td>POLS 303</td>
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<td>4A,4B</td>
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<tr>
<td>Electives</td>
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</table>

Total Credits 15

**Junior**

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<tr>
<th>Semester 5</th>
<th>Critical</th>
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<th>Credits</th>
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<tr>
<td>POLS*** Tier Three (See Department list on Concentration Requirements Tab)</td>
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<tr>
<td>POLS*** Tier Four (See Department list on Concentration Requirements Tab)</td>
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<td>Support Option (See option list on Concentration Requirements Tab)</td>
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<tr>
<td>Elective</td>
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</table>

Total Credits 12-15
Minor in Applied Environmental Policy Analysis

The minor in Applied Environmental Policy Analysis will provide students with a rigorous and in-depth study of the public sector environment, practice, and methods for analyzing and developing policy. Each course will also have the environment as a focus in the material, exams, and assignments. At the end of the minor students will be able to recall and explain the basic rationales for public policies; be able to apply rigorous research methods for evaluating policy; and be able to integrate the elements of theory, methods, problem structuring, ethics, analysis and argumentation to generate reports usable in government and nonprofit management. The minor is appropriate for practicing professionals and current undergraduate students interested in expanding their applied evaluation skills and environmental policy expertise.

Requirements

Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must complete each course in the minor with a grade of C or better.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Division</td>
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</tr>
<tr>
<td>POLS 101</td>
<td>American Government and Politics (GT-SS1)</td>
<td>3</td>
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</table>

POLS 420 History of Political Thought 4A, 4B
POLS 421 Contemporary Political Theories 4A, 4B
POLS 422 Democratic Theory 4A, 4B
POLS 423 American Political Theories 4A, 4B

Support Option (See option list on Concentration Requirements Tab) 3-6
Electives 3-9

Total Credits 15

Senior

Semester 7

Critical  Recommended  AUCC  Credits
POLS*** Tier Four (See option list on Concentration Requirements Tab) 3-6
Support Option (See option list on Concentration Requirements Tab) 3-6
Elective 0-3

Total Credits 12-15

Semester 8

Critical  Recommended  AUCC  Credits
POLS 492 Capstone Seminar X 4A, 4B, 4C 3
Support Option (See option list on Concentration Requirements Tab) X 3-6
Elective X 3-9

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 15

Program Total Credits: 120

Minor in Political Science

The minor in Political Science provides a sound academic core for students in other social science or non-social science majors who are interested in politics. It may be particularly useful for persons preparing themselves for careers in law, teaching in the social sciences, journalism, and public service.

Requirements

Effective Spring 1990

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must complete each course in the minor with a grade of C or better.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Division</td>
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<td></td>
</tr>
<tr>
<td>POLS 103</td>
<td>State and Local Government and Politics (GT-SS1)</td>
<td>3</td>
</tr>
</tbody>
</table>

POLS 361 U.S. Environmental Politics and Policy 3
POLS 364 U.S. Energy Policy Analysis 3
POLS 459 Program Evaluation for Public Administrators 3
POLS 460 Public Policy Process 3
POLS 465 Public Policy Analysis 3

Total Credits 21
Select two courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit(s)</th>
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<tbody>
<tr>
<td>POLS 103</td>
<td>State and Local Government and Politics</td>
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<tr>
<td></td>
<td>(GT-SS1)</td>
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<tr>
<td>POLS 232</td>
<td>International Relations (GT-SS1)</td>
<td>3</td>
</tr>
<tr>
<td>POLS 241</td>
<td>Comparative Government and Politics (GT-SS1)</td>
<td>3</td>
</tr>
</tbody>
</table>

Upper Division

Twelve credits in political science courses with at least three credits in political theory and in at least one additional subfield of political science. Credits earned in POLS 486A, POLS 486B, and POLS 495 may not be used to satisfy this upper-division credit requirement.

Total Credits: 21

Department of Sociology

Office in Clark Building, Room B258
(970) 491-6045
sociology.colostate.edu (http://sociology.colostate.edu)

Professor Pete Taylor, Chair
Associate Professor Mike Lacy, Director of Graduate Studies
Associate Professor Lynn Hempel, Director of Undergraduate Studies

Undergraduate

Majors

- Major in Sociology
  - Criminology and Criminal Justice Concentration
  - Environmental Sociology Concentration
  - General Sociology Concentration

Minors

- Minor in Criminology and Criminal Justice
- Minor in General Sociology

Graduate

Graduate Programs in Sociology

Programs leading to M.A. and Ph.D. degrees are described in the Graduate and Professional Bulletin and the Department of Sociology. (http://sociology.colostate.edu)

Master Programs

- Master of Art in Sociology, Plan A*
- Master of Art in Sociology, Plan B*

Ph.D.

- Ph.D. in Sociology*

* Please see department for program of study.

Courses

Sociology (SOC)

SOC 100 General Sociology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of human societies in the U.S. and abroad; major institutions, groups, and interaction patterns from the sociological perspective.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 105 Social Problems (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of global and domestic social problems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 192 Civic Culture and Social Responsibility Credits: 3 (0-0-3)
Course Description: Erosion of civility in society with particular emphasis on civic culture on the university campus.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 205 Contemporary Race-Ethnic Relations (GT-SS3) Credits: 3 (3-0-0)
Course Description: People of color and white ethnic groups in the U.S. and internationally.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 210 Quantitative Sociological Analysis Credits: 3 (3-0-0)
Course Description: Application of quantitative concepts and methodology to investigation of social problems.
Prerequisite: MATH 100 to 199 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOC 220 Global Environmental Issues (GT-SS3) Credits: 3 (3-0-0)
Course Description: Relationship between human societies around the world and the larger natural environment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 210 Population-Natural Resources and Environment Credits: 3 (3-0-0)
Course Description: Population studies; world growth patterns and their relationship to natural resources and environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 200 Social Stratification Credits: 3 (3-0-0)
Course Description: Theories of social inequality and mobility and their ramifications in American society.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 190 Principles of Sociology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Theoretical approaches and models in sociology.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 180 Food Justice Credits: 3 (3-0-0)
Course Description: Food justice strives to eliminate exploitation and oppression by challenging the structural drivers within and beyond the food system. As a practice, food justice advocates for the right to healthy food that is justly and sustainably produced, recognizes diverse cultural foodways and histories, and promotes democratic participation and equitable distribution of resources in the food system.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 170 Introduction to Sociology Credits: 3 (3-0-0)
Course Description: Application of sociological concepts to sociological problems including problem formulation, data gathering, and research design.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 160 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Role of soil in our environment and its value as it relates to the social and economic well-being of society.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 150 Global Environmental Issues Credits: 3 (3-0-0)
Course Description: Role of soil in our environment and its value as it relates to the social and economic well-being of society.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 140 Introduction to Criminal Justice Credits: 3 (3-0-0)
Course Description: Criminal justice as a system. History, philosophy, components and administration of criminal justice.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 130 Methods of Sociological Inquiry Credits: 3 (3-0-0)
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 120 Global Environmental Issues Credits: 3 (3-0-0)
Course Description: Central themes in sociological thought from Enlightenment to present.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 110 Methods of Sociological Inquiry Credits: 3 (3-0-0)
Course Description: Central themes in sociological thought from Enlightenment to present.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 100 Population-Natural Resources and Environment Credits: 3 (3-0-0)
Course Description: Relationship between human societies around the world and the larger natural environment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 100 Principles of Sociology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Relationship between human societies around the world and the larger natural environment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOC 332 Comparative Majority-Minority Relations Credits: 3 (3-0-0)
Course Description: Discrimination, ideology, power, policy issues in the U.S. and selected societies; application of basic concepts in student's self appraisal.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 333 Gender and Society Credits: 3 (3-0-0)
Course Description: Analysis of social organization of gender in contemporary society, emphasizing gendered experiences and institutional linkages.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 334 Sociology of Intersectionality Credits: 3 (3-0-0)
Course Description: Multiple and intersecting ways race, class, gender, and sexuality shape society, individual life-chances, and daily social interactions.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 340 Bureaucracy and Modern Organizations Credits: 3 (3-0-0)
Course Description: Structure and function of large-scale organization; coordination of activities between organizations and society.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 341 Sociology of Rural Life Credits: 3 (3-0-0)
Course Description: Rural life in U.S. and third world societies; analysis of sociocultural systems, social differentiation, social institutions, and problems of social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 342 Leisure and Society Credits: 3 (3-0-0)
Course Description: Nature and purpose of leisure and work in society; influences of culture and social structure on leisure values and behavior.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 343 Sport and Society Credits: 3 (3-0-0)
Course Description: Analysis of sports as social phenomena with a focus on the social implications of sports in everyday life.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 344 Health, Medicine, and Society Credits: 3 (3-0-0)
Course Description: The impact of sociocultural factors like social class, gender, and race/ethnicity on health and illness in society and the social organization of healthcare delivery. The U.S. health care system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 352 Criminology Credits: 3 (3-0-0)
Course Description: Crime in contemporary society; behavioral, causation, prevention, and justice issues.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 353 Criminal Investigations Credits: 3 (3-0-0)
Course Description: Examination of the social, organization, and applied facets of the criminal investigation process.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 354 Law Enforcement and Society Credits: 3 (3-0-0)
Course Description: Rise and development of law enforcement as a societal reaction to crime.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 358 Correctional Organizations Credits: 3 (3-0-0)
Course Description: Social and organizational issues in the administration of punishment and correction.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 359 Green Criminology Credits: 3 (3-0-0)
Course Description: Environmental offenses, victims, and responses to environmental crimes and harms.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 360 Political Sociology Credits: 3 (3-0-0)
Course Description: Analysis of power as a sociological concept, emphasizing competing theories of the state and power.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOC 364 Agriculture and Global Society  Credits: 3 (3-0-0)
Course Description: Analysis of relationships between global agriculture and social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 366 Peoples and Institutions of Latin America  Credits: 3 (3-0-0)
Course Description: Change in the cultures and institutions of contemporary Latin America.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 371 Symbolic Interaction  Credits: 3 (3-0-0)
Course Description: Basic concepts and issues in sociological perspective of social action and interactionism.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 372 Sociology of Deviance  Credits: 3 (3-0-0)
Course Description: Description, comparison, and analysis of theories and research of deviance.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 375 Sociology of Religion and Medicine  Credits: 3 (3-0-0)
Course Description: Descriptions and analyses of the roles and relationships of religion and medicine as modern social institutions.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 403 Capstone Seminar  Credits: 3 (0-0-3)
Course Description: Student demonstration of central concepts and procedures currently employed in sociology discipline.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or CS 110).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 422 Comparative Legal Systems  Credits: 3 (3-0-0)
Also Offered As: ANTH 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both SOC 422 and ANTH 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOC 429 Comparative Urban Studies  Credits: 3 (3-0-0)
Course Description: World urbanization and metropolitan development, measurement of growth and change in cities, and sociological perspective in planning.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 431 Community Dynamics and Development  Credits: 4 (3-2-0)
Course Description: Nature of community; its institutions, problems and processes, including growth, disintegration, and development.
Prerequisite: (SOC 100 or SOC 105) and (SOC 311).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 444 Federal Indian Law and Policy  Credits: 3 (3-0-0)
Also Offered As: ETST 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both SOC 444 and ETST 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 450 Gender, Crime, and Criminal Justice  Credits: 3 (3-0-0)
Course Description: Issues related to women as offenders, victims, and professionals in the criminal justice system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 455 Sociology of Law  Credits: 3 (3-0-0)
Course Description: Social origins, functions, and procedures of law in society.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 460 Society and Environment  Credits: 3 (3-0-0)
Course Description: Technology as a social phenomenon interacting with social organization and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 461 Water, Society, and Environment  Credits: 3 (3-0-0)
Course Description: Social aspects of water resource utilization; interface of social organization with physical environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOC 487 Internship Credits: 3 (3-0-0)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of sociological principles and seminar participation.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or CS 110).
Registration Information: Must have concurrent registration in SOC 492.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 492 Seminar Credit: 1 (0-0-1)
Course Description: Examination of work-oriented instruction in seminar setting where sociological principles are analyzed using internship experience.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or CS 110).
Registration Information: Must have concurrent registration in SOC 487.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 500 The Sociological Profession I Credit: 1 (1-0-0)
Course Description: Examination of issues and values affecting sociology as a profession.
Prerequisite: SOC 100 to 481 - at least 15 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 501 The Sociological Profession II Credits: 3 (3-0-0)
Course Description: Examination of the activities and procedures critical to the socialization of professional sociologists.
Prerequisite: SOC 500, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 502 Foundations of Theoretical Sociology Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists prior to mid-20th century.
Prerequisite: SOC 502.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 503 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists since mid-20th century.
Prerequisite: SOC 502.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 510 Sociological Methods I Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 210 or SOC 311.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 511 Sociological Methods II Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 510.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 540 Community Sociology Credits: 3 (3-0-0)
Course Description: Intellectual roots of community sociology and contemporary community studies.
Prerequisite: SOC 500.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
SOC 555  Society, Deviance, and Crime  Credits: 3 (0-0-3)
Course Description: Sociological perspectives and research in the areas of deviance and crime, including classical, positivist, and critical approaches.
Prerequisite: SOC 300 to 499 - at least 12 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 562  Sociology of Food Systems and Agriculture  Credits: 3 (2-0-1)
Also Offered As: AGRI 562.
Course Description: How agricultural choices generate intended and unintended consequences for human communities and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for both SOC 562 and AGRI 562.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 564  Environmental Justice  Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 566  Contemporary Issues of Developing Countries  Credits: 3 (3-0-0)
Also Offered As: AREC 566.
Course Description: Social, economic, and technological factors in developing countries.
Prerequisite: None.
Registration Information: Must have taken 2 or more courses in SOC or AREC or ECON. Credit not allowed for both SOC 566 and AREC 566.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 610  Seminar in Methods of Qualitative Analysis  Credits: 3 (0-0-3)
Course Description: Examination and application of qualitative techniques of analysis.
Prerequisite: SOC 311, may be taken concurrently or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOC 610 and POLS 621.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 612  Seminar in Methods of Evaluational Research  Credits: 3 (0-0-3)
Course Description: Quantitative and qualitative techniques of evaluating social action programs.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 613  Seminar in Multiple Regression and Path Analysis  Credits: 3 (0-0-3)
Course Description: Analysis and application of techniques for multiple regression and path analysis.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 614  Comparative Sociology  Credits: 3 (3-0-0)
Course Description: Examination of problems and prospects in extending and carrying out sociological research across social systems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 630  Social Stratification  Credits: 3 (3-0-0)
Course Description: Theory and research on class structure, status attainment, ideology, and social change.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 631  Sociology of Rural Development  Credits: 3 (3-0-0)
Course Description: Rural social organization and development, modernization, and social change as it relates to rural social systems; underdeveloped regions of world.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 633  Theories of Modern Organizations  Credits: 3 (3-0-0)
Course Description: Comparison of various theoretical perspectives on functioning of modern large-scale organizations.
Prerequisite: SOC 340.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 639  Technology Assessment and Social Forecasting  Credits: 3 (3-0-0)
Course Description: Interrelationship between technology and society emphasizing procedures for evaluating impacts and forecasting alternatives.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOC 660  Theories of Development and Social Change  Credits: 3 (3-0-0)
Course Description: Central concepts, issues, and approaches in sociology of development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 661  Gender and Global Society  Credits: 3 (0-0-3)
Course Description: Gender relations and social change in global society.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 662  Seminar in Sociological Policy Analysis  Credits: 3 (0-0-3)
Course Description: Examination of sociological perspectives on formulation and impact of policies to deal with social problems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 663  Sociology of Sustainable Development  Credits: 3 (3-0-0)
Course Description: Social dimensions of sustainable Third World development and implications for policy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 664  Sociology of Water Resources  Credits: 3 (3-0-0)
Course Description: Social organization, conflict, and power in arid environments.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 665  Sociology of Science and Technology  Credits: 3 (3-0-0)
Course Description: Examination of connections among science, technology, and social development in national and global context.
Prerequisite: SOC 100.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken 10 credits of undergraduate natural sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 666  Globalization and Socioeconomic Restructuring  Credits: 3 (0-0-3)
Course Description: Sociological theories and issues in globalization; socioeconomic restructuring of the world economy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 667  Theories of State, Economy, and Society  Credits: 3 (3-0-0)
Course Description: Major classical and contemporary sociological theories of state-economy-society relations emphasizing development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 668  Environmental Sociology  Credits: 3 (3-0-0)
Course Description: Connections between social organizations, the environment, and science and technology.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 669  Global Inequality and Change  Credits: 3 (0-0-3)
Course Description: Major issues in global inequality and change from a historical and contemporary perspective.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 671  Metatheoretical Issues in Sociology  Credits: 3 (0-0-3)
Course Description: Analysis of metatheoretical concepts and issues in sociological theory.
Prerequisite: SOC 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693A  Seminar: Structural Theory  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693B  Seminar: Cultural Theory  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693C  Seminar: Middle Range Theory  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Major in Sociology

Sociology is the study of social life, focusing on the mutual interaction between human groups and institutions. Human beings, through patterned social interactions, construct and reconstruct the social webs within which they live. The nature and type of social relationships are central to their lives. Sociologists study relationships within family units from the most primitive cultures to interactions of large, bureaucratic institutions in major industrialized nations. Social issues are studied in a variety of ways: direct observation of groups; surveying or interviewing individuals; analyzing historical research; and a variety of other methods.

Sociology majors have many opportunities to pursue broad and diverse ranges of interest. Students gain a sense of social perspective, an understanding of human affairs, an ability to think critically, and a capacity to write well. The curriculum includes general courses in the arts and humanities and the social sciences along with sociology course work. A generous selection of electives allows students to major or minor in a complementary discipline. A Sociology major also may enroll in one of the interdisciplinary minors, such as, Latin American and Caribbean Studies, Religious Studies, or Women’s Studies.

Learning Outcomes

Students will:

- Analyze critically the major classical and contemporary theories from the 19th and 20th centuries. Students are expected to demonstrate
how well these theories help us understand or explain current social phenomena both in the U.S. and abroad. Students will learn to apply a wide variety of theories, including European critical theory, functionalism, symbolic interactionism, and post-modern theory, in required empirical research.

- Analyze critically sociological phenomena by applying objective social research methodologies. Students will demonstrate a working knowledge of sociological theories and the application of these theories to real world social phenomena. Specifically, students will understand conceptual frameworks associated with
  a. social structure (social stratification, ethnic structures, social institutions, small group dynamics, social demography, and social organizations);
  b. culture (socialization and the development of personalities, social norms, framing normative assumptions of societies and organizations); and
  c. social agency (the behavior of the individual, collective behavior such as with social movements, and the principles of social psychology).

- Analyze critically sociological phenomena by applying social statistical techniques. Students will demonstrate a strong working knowledge of statistical techniques including
  a. parametric statistics,
  b. non-parametric statistics,
  c. ordinary least squares statistical analysis, and
  d. the application of the SPSS statistical package.

Potential Occupations
Careers are exceptionally varied. Participating in internships and cooperative education opportunities is highly recommended to enhance practical training and development. Sociology graduates apply their education to a large variety of occupations in the non-profit, private, and public sectors. Because Sociology graduates possess a number of transferable communication, analytical, and people skills, they find positions in government, industry, and academia. Many employers appreciate liberal arts majors for their multiple skills and their ability to adapt to a variety of tasks and work environments. Graduates who go on for advanced studies can pursue careers in sociology or attain advanced positions with the possibility of rising to top professional levels.

Depending on student interests, the electives taken, or the concentration selected, available career choices include, but are not limited to: business manager, personnel director, city manager, clinical social worker, college/university instructor, human relations director, demographer, government aide, labor relations specialist, market analyst, researcher, medical administrator, police officer, politician, probation/parole officer, program director/manager, public administrator, publishers, sociologist-specialist, consultant, criminologist, lawyer, librarian.

Concentrations
- Criminology and Criminal Justice Concentration
- Environmental Sociology Concentration
- General Sociology Concentration

Major in Sociology, Criminology and Criminal Justice Concentration
The Criminology and Criminal Justice concentration supplements general sociological training with course work focused on the social aspects of crime and criminal justice. Sociology majors who opt for the Criminology and Criminal Justice concentration will supplement their general sociological training with course work focused on social aspects of crime and criminal justice. Such students will find the concentration helpful in enhancing their ability to think critically about issues of crime and justice, and in preparing for various careers within the criminal justice system.

Requirements

Effective Spring 2015
Sociology majors in the Criminology and Criminal Justice concentration must achieve a minimum grade of C- (1.670) in each Sociology course counted toward the concentration, and in POLS 413 and SOWK 371B or SOWK 371C, if these courses are counted toward the concentration.

Freshman

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Total Credits: 28-30

Sophomore

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Total Credits: 28-30
Major in Sociology, Criminology and Criminal Justice Concentration

Art and Humanities 3B 3
Biological and Physical Sciences 3A 3-4
Global and Cultural Awareness 3E 3
Historical Perspectives 3D 3
Social and Behavioral Sciences 2 6
Electives 9

Total Credits 30-31

Junior

Select one from the following: 3
SOC 210  Quantitative Sociological Analysis
STAT 2** Statistics 3
SOC 301 or 302  Development of Sociological Thought
Contemporary Sociological Theory

Select one from the following: 3
SOC 352  Criminology
SOC 372  Sociology of Deviance
SOC 482B  Travel Abroad: Crime and Deviance
SOC 354  Law Enforcement and Society

Social and Behavioral Sciences 2 12
Electives 6

Total Credits 30

Senior

Select one from the following: 3
POLS 413  U.S. Civil Rights and Liberties
SOC 455  Sociology of Law
SOC 311  Methods of Sociological Inquiry 4A,4B 3
SOC 313  Computer Methods in Sociology 1

Select one from the following: 3
SOC 358  Correctional Organizations
SOWK 371B  Social Work with Selected Populations: Juvenile Offenders
SOWK 371C  Social Work with Selected Populations: Adult Offenders

Select one group from the following: 3-4
Group A:
SOC 403  Capstone Seminar 4C
Group B:
SOC 431  Community Dynamics and Development 4C
Group C:
SOC 487  Internship 4C
SOC 492  Seminar 4C

Electives 4 15-19

Total Credits 29-32

Program Total Credits: 120

1 Select three credits of mathematics from the list of courses in category 1B of the AUCC except MATH 105.
2 Select from a department list of approved courses.
3 Select STAT 201 General Statistics or any statistics course 200-level and above.
4 Select enough elective credits to bring program total to 120 credits, of which at least 42 must be upper-division (300- to 400-level).
# Major Completion Map

## Freshman

### Semester 1

<table>
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<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
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<td>Biological and Physical Sciences</td>
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Select one course from the following:

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<td>SOC 105 Social Problems (GT-SS3)</td>
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<td>SOC 253 Introduction to Criminal Justice</td>
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## Sophomore

### Semester 3

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<td>Historical Perspectives</td>
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### Semester 4

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<td><strong>SOC 253 must be completed by the end of Semester 4.</strong></td>
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## Junior

### Semester 5

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### Semester 6

Select one course from the following:

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<tr>
<td>SOC 210 Quantitative Sociological Analysis</td>
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<td>STAT 2**</td>
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<td>SOC 301 Development of Sociological Thought</td>
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<td>SOC 302 Contemporary Sociological Theory</td>
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<td><strong>SOC 352 Criminology</strong></td>
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<td>SOC 372 Sociology of Deviance</td>
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Major in Sociology, Environmental Sociology Concentration

The Environmental Sociology concentration takes sociology’s long established disciplinary orientation to the world and applies it to the study of nature-society relations. Sociology is about people, institutions, and behaviors. It is about social interactions and social structures. The task of the sociologist, therefore, is to stand back from commonsense views of the world and understanding the structure and processes of a society as a whole, including global societies. Environmental sociology is about translating these tasks into analysis and action around environmental issues. Some of the pressing contemporary environmental issues that environmental sociology can be applied to are, for example, transboundary pollution, climate change, biodiversity loss, and water and soil degradation. Students will find the concentration helpful in preparing them for a growing number of jobs that have a focus in environmentally related matters.

Effective Spring 2015

Freshman

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Total Credits | 30

Program Total Credits: 120
### Sophomore

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Select one from the following:

- SOC 210 Quantitative Sociological Analysis
- STAT 2** Statistics

Select one from the following:

- SOC 301 Development of Sociological Thought
- SOC 302 Contemporary Sociological Theory

Social and Behavioral Sciences

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Environmental Sociology Electives

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Electives

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### Junior

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<td>4A,4B 3</td>
</tr>
<tr>
<td>SOC 313</td>
<td>Computer Methods in Sociology</td>
<td>1</td>
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Select one group from the following:

- **Group A:**
  - SOC 403 Capstone Seminar
- **Group B:**
  - SOC 431 Community Dynamics and Development
- **Group C:**
  - SOC 487 Internship
  - SOC 492 Seminar

Environmental Sociology Electives

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Electives

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### Senior

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<tr>
<td>SOC 311</td>
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<td>4A,4B 3</td>
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<tr>
<td>SOC 313</td>
<td>Computer Methods in Sociology</td>
<td>1</td>
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</table>

Select one group from the following:

- **Group A:**
  - SOC 403 Capstone Seminar
- **Group B:**
  - SOC 431 Community Dynamics and Development
- **Group C:**
  - SOC 487 Internship
  - SOC 492 Seminar

Environmental Sociology Electives

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Electives

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**Total Credits**

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**Program Total Credits:**

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### Environmental Sociology Electives

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<td>Population-Natural Resources and Environment</td>
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<td>SOC 321</td>
<td>Soil, Environment, and Society</td>
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<tr>
<td>SOC 322</td>
<td>Introduction to Environmental Justice</td>
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<td>SOC 323</td>
<td>Sociology of Environmental Governance</td>
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<tr>
<td>SOC 360</td>
<td>Political Sociology</td>
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<td>SOC 362</td>
<td>Social Change</td>
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<td>SOC 364</td>
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**Total Credits**

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**Program Total Credits:**

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Major in Sociology, Environmental Sociology Concentration

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<td>SOC 461</td>
<td>Water, Society, and Environment</td>
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<td>SOC 462</td>
<td>Applied Social Change</td>
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<td>SOC 463</td>
<td>Sociology of Disaster</td>
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<td>SOC 564</td>
<td>Environmental Justice</td>
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Out-of-Department Courses
Students may select up to 6 credits from the following courses, in addition to a minimum of 6 credits from the sociology courses listed above, for a total of 12 credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 415</td>
<td>Indigenous Ecologies and the Modern World</td>
</tr>
<tr>
<td>ANTH 446</td>
<td>New Orleans and the Caribbean</td>
</tr>
<tr>
<td>ERHS 220</td>
<td>Environmental Health</td>
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<td>ERHS 430</td>
<td>Human Disease and the Environment</td>
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<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
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<td>HIST 470</td>
<td>World Environmental History, 1500-Present</td>
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<tr>
<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<td>NR 330</td>
<td>Human Dimensions in Natural Resources</td>
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<td>NR 425</td>
<td>Natural Resource Policy and Sustainability</td>
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<td>PHIL 345</td>
<td>Environmental Ethics</td>
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<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
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<td>POLS 362</td>
<td>Global Environmental Politics</td>
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<tr>
<td>PSY 316</td>
<td>Environmental Psychology</td>
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</table>

1. Select three credits of mathematics from category 1B of the All-University Core Curriculum (AUCC) except MATH 105.
2. Select from a department list of approved courses.
3. Select 12 credits from the department list below of eligible upper division sociology courses. A total of 6 credits can come from outside sociology. See the department list for preapproved courses. Students can also petition the department for program credit when >25% of course material and grading are related to environment and society.
4. Select STAT 201 General Statistics or any statistics course 200-level and above.
5. Select enough elective credits to bring program total to minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<tr>
<td>College Composition (GT-CO2)</td>
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<tr>
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<tr>
<td>Biological and Physical Sciences</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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<tr>
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<tr>
<td>SOC 100</td>
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</tr>
<tr>
<td>General Sociology (GT-SS3)</td>
<td></td>
<td></td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>SOC 105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Problems (GT-SS3)</td>
<td></td>
<td></td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
<td>1B</td>
<td>3</td>
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<tr>
<td>Electives</td>
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**Sophomore**

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<tbody>
<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<tr>
<td>Total Credits</td>
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</table>

1. Select three credits of mathematics from category 1B of the All-University Core Curriculum (AUCC) except MATH 105.
2. Select from a department list of approved courses.
3. Select 12 credits from the department list below of eligible upper division sociology courses. A total of 6 credits can come from outside sociology. See the department list for preapproved courses. Students can also petition the department for program credit when >25% of course material and grading are related to environment and society.
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5. Select enough elective credits to bring program total to minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
### Semester 4

<table>
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<tr>
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<td>SOC 220 Global Environmental Issues (GT-SS3)</td>
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<td>Advanced Writing</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<tr>
<td>Environmental Sociology Elective (See List on Concentration Requirements Tab)</td>
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<tr>
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### Junior

#### Semester 5

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<tr>
<td>SOC 210 Quantitative Sociological Analysis</td>
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<tr>
<td>STAT 2**</td>
<td>X</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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<tr>
<td>Environmental Sociology Elective (See List on Concentration Requirements Tab)</td>
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<td>Elective</td>
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#### Semester 6

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<tr>
<td>SOC 301 Development of Sociological Thought</td>
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<tr>
<td>SOC 302 Contemporary Sociological Theory</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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<td>Electives</td>
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### Senior

#### Semester 7

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<tr>
<td>SOC 313 Computer Methods in Sociology</td>
<td>X</td>
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<tr>
<td>SOC 311 Methods of Sociological Inquiry</td>
<td>X</td>
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<td>4A,4B</td>
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<td>Environmental Sociology Electives (See List on Concentration Requirements Tab)</td>
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#### Semester 8

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<tr>
<td>Group A: Capstone Seminar</td>
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<td>4C</td>
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<td>Group B: Community Dynamics and Development</td>
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<td>4C</td>
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<td>Group C: Internship</td>
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<td>4C</td>
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<td>Electives</td>
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<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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<td><strong>Total Credits</strong></td>
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**Program Total Credits:** 120
Major in Sociology, General Sociology Concentration

The General Sociology concentration is designed to provide students with a broad liberal arts education and a greater understanding and insight into the social systems and processes that bear upon everyday lives. Students will find the concentration helpful in enhancing their ability to grasp the complexities of the world so as to prepare them for a variety of jobs upon graduation. Opportunities for students with bachelor’s degrees in Sociology are quite varied. Some go on to work for human service agencies; others work in the fields of criminal justice and urban planning; others enter graduate programs in sociology, education, law, medicine, or social work.

Requirements

Effective Spring 2015

Freshman

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
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<td>SOC 105</td>
<td>Social Problems (GT-SS3)</td>
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<td>Arts and Humanities</td>
<td>3B</td>
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<td>Biological and Physical Sciences</td>
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<tr>
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Total Credits: 29-31

Sophomore

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<tbody>
<tr>
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<td>Advanced Writing</td>
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<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
</tr>
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<td></td>
<td>Biological and Physical Sciences</td>
<td>3A</td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
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<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
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Total Credits: 30-31

Junior

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<tbody>
<tr>
<td>SOC 210</td>
<td>Quantitative Sociological Analysis</td>
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<tr>
<td>STAT 2**</td>
<td>Statistics</td>
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<tr>
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<td>Select one from the following:</td>
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<tr>
<td>SOC 301</td>
<td>Development of Sociological Thought</td>
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</tr>
<tr>
<td>SOC 302</td>
<td>Contemporary Sociological Theory</td>
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<tr>
<td>SOC ***</td>
<td>Upper-Division Sociology</td>
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<td>Social and Behavioral Sciences</td>
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Total Credits: 29-30

Senior

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<tr>
<td>SOC 311</td>
<td>Methods of Sociological Inquiry</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>SOC 313</td>
<td>Computer Methods in Sociology</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Select one group from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group A:</td>
<td></td>
<td>3-4</td>
</tr>
</tbody>
</table>
SOC 403 Capstone Seminar 4C
Group B:
SOC 431 Community Dynamics and Development 4C
Group C:
SOC 487 Internship 4C
SOC 492 Seminar 4C
SOC *** Upper-Division Sociology 3
Electives5 19-20
Total Credits 30
Program Total Credits: 120

1 Select three credits of mathematics from category 1B of the All-University Core Curriculum (AUCC) except MATH 105.
2 Select from a department list of approved courses.
3 Select courses representing the major areas of sociology, or ANTH 440.
4 Select STAT 201 or any statistics course 200-level or above.
5 Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 15

Semester 2

Select one course from the following:

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>SOC 105</td>
<td>Social Problems (GT-SS3)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td>X</td>
<td>1B</td>
</tr>
<tr>
<td>Sociology Elective</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
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<td>6</td>
</tr>
</tbody>
</table>

CO 150 must be completed by the end of Semester 2.

Total Credits 15

Sophomore

Semester 3

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
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</tbody>
</table>

Total Credits 16

Semester 4

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>Sociology Electives</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 15
## Minor in Criminology and Criminal Justice

The department offers a minor in Criminology and Criminal Justice for students from other departments who wish some experience in an area outside their majors. Minors require fewer credit hours to complete than majors. Students will focus on the social aspects of crime, deviance, and criminal justice.

### Junior

#### Semester 5

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social and Behavioral Sciences</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper-Division Sociology</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>14</strong></td>
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</table>

#### Semester 6

<table>
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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
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</tr>
<tr>
<td>SOC 210</td>
<td>Quantitative Sociological Analysis</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>STAT 2**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SOC 301</td>
<td>Development of Sociological Thought</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>SOC 302</td>
<td>Contemporary Sociological Theory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
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### Senior

#### Semester 7

<table>
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<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 313</td>
<td>Computer Methods in Sociology</td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>SOC 311</td>
<td>Methods of Sociological Inquiry</td>
<td>X</td>
<td>4A,4B</td>
</tr>
<tr>
<td>Upper-Division Sociology</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOC 210 must be completed by the end of Semester 7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
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</table>

#### Semester 8

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Select one group from the following:</td>
<td></td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>Group A:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOC 403</td>
<td>Capstone Seminar</td>
<td></td>
<td>4C</td>
</tr>
<tr>
<td>Group B:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOC 431</td>
<td>Community Dynamics and Development</td>
<td></td>
<td>4C</td>
</tr>
<tr>
<td>Group C:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOC 487</td>
<td>Internship</td>
<td></td>
<td>4C</td>
</tr>
<tr>
<td>SOC 492</td>
<td>Seminar</td>
<td></td>
<td>4C</td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td>11-12</td>
</tr>
<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>15</strong></td>
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</table>

### Program Total Credits:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 100</td>
<td>General Sociology (GT-SS3)</td>
<td>3</td>
</tr>
<tr>
<td>or SOC 105</td>
<td>Social Problems (GT-SS3)</td>
<td></td>
</tr>
</tbody>
</table>

### Requirements

**Effective Spring 2014**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must receive a grade of C or higher for each course counting toward the minor.
Minor in General Sociology

A minor in Sociology provides the student with basic technical skills and conceptual framework to study human societies. From an array of courses, the student can select the areas of study which enhance the focus of his/her major.

Requirements

Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must receive a grade of C or higher for each course counting toward the minor.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 253</td>
<td>Introduction to Criminal Justice</td>
<td>3</td>
</tr>
<tr>
<td><strong>Upper Division</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOC 301</td>
<td>Development of Sociological Thought</td>
<td>3</td>
</tr>
<tr>
<td>or SOC 302</td>
<td>Contemporary Sociological Theory</td>
<td></td>
</tr>
<tr>
<td>SOC 311</td>
<td>Methods of Sociological Inquiry</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose one course from each of the following five groups:

- **Group A:**
  - SOC 352 Criminology
  - SOC 372 Sociology of Deviance
  - SOC 482B Travel Abroad: Crime and Deviance

- **Group B:**
  - SOCS 354 Law Enforcement and Society

- **Group C:**
  - POLS 413 U.S. Civil Rights and Liberties
  - SOCS 455 Sociology of Law

- **Group D:**
  - SOC 358 Correctional Organizations
  - SOC 450 Gender, Crime, and Criminal Justice
  - SOWK 371B Social Work with Selected Populations: Juvenile Offenders
  - SOWK 371C Social Work with Selected Populations: Adult Offenders

- **Group E:**
  - SOC 482A Travel Abroad: Comparative Criminal Justice
  - SOC 564 Environmental Justice

Total Credits: 21

Warner College of Natural Resources

Office in Natural Resources Building, Room 101
(970) 491-6675
warnercnr.colostate.edu (http://warnercnr.colostate.edu)

Professor John Hayes, Dean

Undergraduate Majors

- Ecosystem Science and Sustainability
- Fire and Emergency Services Administration
- Fish, Wildlife, and Conservation Biology
- Forestry
- Geology
- Human Dimensions of Natural Resources
- Natural Resource Tourism
- Natural Resources Management
- Rangeland Ecology
- Watershed Science

Undergraduate Minors

- Ecological Restoration
- Fishery Biology
- Forestry
- Geology
- Range Ecology
- Spatial Information Management
- Watershed Science

Interdisciplinary Minor

- Interdisciplinary Minor in Conservation Biology

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

- The College offers studies and professional training in the management, administration, and scientific investigation of renewable and nonrenewable natural resources. Programs include
the study of every component of natural systems with particular emphasis on fish, forests, minerals, range, watershed, wildlife, and outdoor recreation areas.

The Natural Resource Ecology Laboratory, housed in the College, is devoted to research and training in ecosystem science and management.

The College also houses the Center for Environmental Management of Military Lands which is a team of environmental professionals experienced in the conservation and sustainable management of natural and cultural resources on Department of Defense lands.

College Programs
Undergraduate Majors
The scope of the College’s programs is more broadly based than most natural resources schools. There are ten undergraduate curricula, most with specialized concentrations or designated areas of further study. Undergraduate majors in all five departments lead to the Bachelor of Science degree, which requires a minimum of 120 credits. A minimum of 42 credits in upper division courses is required for all majors.

Field Training Programs
Most undergraduate majors require the completion of a four-week summer field training program (five credits) before their junior year. Summer field instruction is given at the CSU Mountain Campus (http://mountaincampus.colostate.edu) campus, 55 miles west of Fort Collins. Permanent quarters and meals are provided.

During interim or summer periods, some majors devote several weeks to advanced field training programs off campus. Students taking advanced ROTC should arrange their schedules with their advisors in their junior year to avoid conflicts during senior spring semester. It is recommended for all majors, and required for some, that students have a minimum of one summer of field experience before graduation.

International Education
International resources management is an increasingly important concern of the Warner College of Natural Resources. It is desirable that students in the College have opportunities to study abroad, just as students from abroad are encouraged to study here. CSU has agreements covering study abroad opportunities with institutions throughout the world. Students may complete one or two semesters of resources management education abroad. Students interested in studying abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Graduate Programs
Master of Science and Doctor of Philosophy degree programs are offered in most departments. A program leading to the professional degree, Master of Natural Resources Stewardship, is offered in the Department of Forest and Rangeland Stewardship. The Department of Fish, Wildlife, and Conservation Biology also offers a professional degree, Master of Fish, Wildlife, and Conservation Biology. Descriptions of the various graduate programs may be found in the Graduate and Professional Bulletin or on the departmental websites.

Admissions Information
Contact: Ethan Billingsley, Director of Undergraduate Programs
(970) 491-4994
ethan.billingsley@colostate.edu

For High School Graduates
High school students are advised to take all the English, science, and mathematics courses possible to prepare for college-level work in natural resources.

Limitation on Transfer of Credits
Students planning to attend another college or community college prior to enrolling at CSU should follow the freshman program for their chosen major as closely as possible. To assure that they have the opportunity to complete all degree requirements in four years, they should plan to transfer to CSU no later than the beginning of their junior year. Credits which transfer but are not equivalent to specific curriculum requirements may be used as elective credits.

Transfer Students
Students are required to choose a major when enrolling. Transfer students, therefore, should follow the departmental curriculum closely. Check the individual major and concentration for specific courses.

Department of Ecosystem Science and Sustainability

Office in the Natural and Environmental Sciences Building, Room B205
(970) 491-5589
Professor John C. Moore, Department Head
WCNR_ESS_info@Mail.ColoState.edu
warnercnr.colostate.edu/ess-home (http://warnercnr.colostate.edu/ess-home)

The Department of Ecosystem Science and Sustainability currently offers a B.S. in Ecosystem Science and Sustainability, a B.S. in Watershed Science, a minor in Watershed Science, an M.S. in Watershed Science, and a Master of Greenhouse Gas Management and Accounting program.

Undergraduate Majors
• Major in Ecosystem Science and Sustainability
• Major in Watershed Science
Minors

• Minor in Watershed Science

Graduate

Graduate Programs in Ecosystem Science and Sustainability

The department offers graduate programs leading to a Master of Science in Watershed Science or a Master of Science in Greenhouse Gas Management and Accounting. Students interested in graduate work should refer to the Graduate and Professional Bulletin and website for the Department of Ecosystem Science and Sustainability (http://warnercnr.colostate.edu/ess-home).

Master Programs

• Master of Greenhouse Gas Management and Accounting, Plan C (M.G.M.A.)
• Master of Science in Watershed Science, Plan A
• Master of Science in Watershed Science, Plan B

Courses

Subjects in this department include: Ecosystem Science and Sustainability (ESS) and Watershed Science (WR).

Ecosystem Science and Sustainability (ESS)

ESS 130 System Theory and Information Management Credit: 1 (0-2-0)
Course Description: Applying computers, networks, software applications, and the internet for managing information in ecosystem science and sustainability.
Prerequisite: AGRI 140 or BUS 150 or CS 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 210 Physical Geography Credits: 3 (3-0-0)
Also Offered As: GR 210.
Course Description: Energy, mass budget, and human impacts on atmosphere, hydrosphere, and continental land surfaces.
Prerequisite: None.
Registration Information: Credit not allowed for both ESS 210 and GR 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 211 Foundations in Ecosystem Science Credits: 3 (3-0-0)
Course Description: Linkage between society and ecosystems services as foundation for sustainability of the coupled human-environmental system.
Prerequisite: GR 210 or ESS 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 220 Research Skills for Ecosystem Science I Credit: 1 (0-0-1)
Course Description: Fundamental skills for participating in ecosystem science research through hands-on learning modules.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 221 Research Methods for Ecosystem Science II Credit: 1 (0-0-1)
Course Description: Advanced topics in the practice of the scientific method and participation in research.
Prerequisite: ESS 220.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 298 Research Credits: Var[1-3] (0-0-0)
Course Description: Directed ecosystem science research.
Prerequisite: ESS 221, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 311 Ecosystem Ecology Credits: 3 (3-0-0)
Course Description: Principles of ecosystems ecology, emphasis on their application to coupled natural and human systems.
Prerequisite: ESS 211.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 330 Quantitative Reasoning for Ecosystem Science Credits: 3 (2-0-1)
Course Description: Understanding diverse approaches for using data and models to understand complex ecological systems.
Prerequisite: (ESS 211 or LIFE 320) and (MATH 155 or MATH 160) and (STAT 301 or STAT 307 or STAT 315).
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 400 Sustainability and Ecosystem Science Credits: 3 (2-0-1)
Course Description: Integrates ecosystems services and sustainability strategies, application to coupled natural and human systems.
Prerequisite: ESS 311 and ESS 330.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ESS 411 Earth Systems Ecology Credits: 3 (2-2-0)
Course Description: Earth as a system, stressing ecological interactions among energy, water, and biogeochemistry.
Prerequisite: ESS 311.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ESS 440  Practicing Sustainability  Credits: 4 (2-0-2)
Course Description: Capstone integration of ecosystem science and sustainability, focused on case studies.
Prerequisite: ESS 311 and ESS 330.
Registration Information: Senior standing in WCNR. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ESS 486 Ecosystem Practicum  Credits: 2 (0-0-2)
Course Description: One-week field practicum to examine ecosystem science and sustainability issues in Colorado landscapes.
Prerequisite: ESS 211 and NR 220.
Registration Information: Senior standing. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 487 Internship  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 495 Independent Study in Ecosystem Science  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 501 Principles of Ecosystem Sustainability  Credits: 3 (3-0-0)
Course Description: Principles of ecosystem sustainability and threats to sustainability. Students will investigate and develop case studies.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Admission to graduate school. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 524 Foundations for Carbon/Greenhouse Gas Mgmt  Credits: 3 (3-0-0)
Course Description: Foundations for understanding greenhouse gas emissions management and accounting.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 542 Greenhouse Gas Policies  Credits: 2 (0-0-2)
Course Description: Rules, regulations and standards for greenhouse gas management and accounting.
Prerequisite: ESS 524.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 543 Current Topics in Climate Change  Credits: 2 (2-0-0)
Also Offered As: ATS 543.
Course Description: Climate fundamentals and current topics in climate change.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.
Registration Information: Credit not allowed for both ESS 543 and ATS 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 545 Applications in Greenhouse Gas Inventories  Credits: 4 (2-6-0)
Course Description: Overview of methods for estimating greenhouse gas emissions and mitigation potential for agriculture and forestry activities.
Prerequisite: ESS 524.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 555 Niche Models  Credits: 4 (3-2-0)
Course Description: Concepts and application of niche models in ecosystem science.
Prerequisite: (BSPM 526 or BZ 526 or BZ 535 or BZ 548 or BZ 561 or ECOL 505 or ECOL 600 or ECOL 610 or ECOL 620 or FW 555 or FW 662) and (STAT 511).
Registration Information: STAT 511 or written consent of instructor. Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 575 Models for Ecological Data  Credits: 4 (3-2-0)
Course Description: Gaining insight about the operation of ecological processes using models and data.
Prerequisite: MATH 255 and STAT 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 587 Internship  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 625 Ecology of Forest Production  Credits: 3 (3-0-0)
Also Offered As: F 625.
Course Description: Develops student expertise in understanding carbon and nutrient flows in forests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken a 300-level course in ECOL. Credit not allowed for both ESS 625 and F 625. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ESS 660 Biogeochemical Cycling in Ecosystems Credits: 3 (3-0-0)
Course Description: Biotic and abiotic processes responsible for distribution and fluxes of elements at ecosystem, landscape, and global scales.
Prerequisite: CHEM 245 and SOCR 240 and ECOL 300 to 699.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 695 Independent Study in Ecosystem Science Credits: Var[1-6] (0-0-0)
Course Description: Evaluation of the physical environment; characteristics of snow; methods of studying snow; snow safety.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 798 Research Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Watershed Science (WR)
WR 304 Sustainable Watersheds Credits: 3 (3-0-0)
Also Offered As: GR 304.
Course Description: Effects of climate, land use, and water use on the sustainability of water quantity and quality.
Restriction: Must be a: Graduate.
Registration Information: Completion of the AUCC 1B Mathematics requirement. Credit not allowed for both WR 304 and GR 304.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A.

WR 406 Seasonal Snow Environments Credits: 3 (2-3-0)
Course Description: Evaluation of the physical environment; characteristics of snow; methods of studying snow; snow safety.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 416 Land Use Hydrology Credits: 3 (3-0-0)
Course Description: Fundamental concepts in hydrology and effects of land use on hydrologic processes.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or SOCR 240) and (CIVE 202 or STAT 201 or STAT 301 or STAT 307 or STAT 315) and (PH 110 or PH 121 or PH 141).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 417 Watershed Measurements Credits: 3 (2-3-0)
Course Description: Instrument and field techniques in watershed science. Project design and data analysis.
Restriction: Must have concurrent registration in WR 416. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.
WR 418  Land Use and Water Quality  Credits: 3 (3-0-0)
Course Description: Physical, chemical, biological water quality parameters affecting land use; land management to maintain water quality; water quality standards, legislation.
Prerequisite: None.
Registration Information: CHEM 103; CHEM 104 or CHEM 107; CHEM 108 or CHEM 111; CHEM 112.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
WR 419  Water Quality Laboratory for Wildland Managers  Credits: 2 (0-4-0)
Course Description: Sampling and determination of water quality parameters.
Prerequisite: None.
Registration Information: Must have concurrent registration in WR 418.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
WR 440  Watershed Problem Analysis  Credits: 3 (2-2-0)
Course Description: Capstone integration of spatial watershed issues, focused on problem solving in watershed science.
Prerequisite: (NR 322 or NR 319) and (WR 416 and WR 418).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
WR 465  Eolian and Fluvial Transport Processes  Credits: 4 (3-3-0)
Course Description: Fundamental physical principles of eolian and fluvial transport processes.
Prerequisite: PH 141.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
WR 474  Snow Hydrology  Credits: 3 (3-0-0)
Course Description: Snowfall, accumulation, distribution, physical processes in the snowpack, energy balance, ablation and runoff, measurement methods, runoff forecasting.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
WR 486  Watershed Field Practicum  Credits: 2 (0-6-0)
Course Description: Field visits to watershed management projects and sites of significant field studies.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
WR 487  Internship  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Watershed Science.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
WR 492  Seminar  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
WR 495  Independent Study-Watershed Resources  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
WR 501  Watershed Management in Developing Countries  Credits: 2 (2-0-0)
Course Description: Watershed management problems, approaches, and solutions in developing countries.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 510  Water Resource Development  Credits: 3 (3-0-0)
Course Description: Basic principles of water resource management including surface and subsurface flows.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
WR 511  Water Law for Non-Lawyers  Credits: 3 (0-0-3)
Course Description: Basics of water law and policy for Colorado, western states, and the U.S.
Prerequisite: None.
Registration Information: Graduate standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
WR 512  Water Law for Non-Lawyers  Credits: 3 (0-0-3)
Course Description: Basics of water law and policy for Colorado, western states, and the U.S.
Prerequisite: None.
Registration Information: Graduate standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
WR 516  Cumulative Effects and Watershed Analysis  Credits: 3 (2-0-1)
Course Description: Definition, causal processes, and modeling of cumulative watershed effects; comparison and evaluation of current watershed analysis procedures.
Prerequisite: WR 416 and WR 417.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 520 Evapotranspiration Credits: 2 (2-0-0)
Course Description: Theory, estimation, measurement, simulation, and application of evapotranspiration processes in hydrology.
Prerequisite: PH 122.
Term Offered: Spring.
Grade Modes: Traditional.
Registration Information: Must register for lecture and recitation. Credit not allowed for both WR 520 and CIVE 524.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 524 Modeling Watershed Hydrology Credits: 3 (2-2-0)
Also Offered As: CIVE 524.
Course Description: Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite: (CIVE 322 or ENVE 322 or WR 416) and (STAT 301 or STAT 315 or CIVE 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both WR 524 and CIVE 524.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 574 Advanced Snow Hydrology Credits: 4 (3-0-1)
Course Description: Snow processes in hydrologic cycle; physical and conceptual methods of modeling; techniques for measuring different states and change rates.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 575 Snow Hydrology Field Methods Credit: 1 (0-2-0)
Course Description: Field course offering hands-on experience in snow hydrology.
Prerequisite: None.
Registration Information: Enrollment in a graduate program. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
WR 616 Hillslope Hydrology and Runoff Processes Credits: 3 (1-0-2)
Course Description: Hillslope hydrology and runoff processes in different environments; implications for management and modeling.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 674 Data Issues in Hydrology Credits: 3 (3-0-0)
Course Description: Types of data, data sources, data quality, missing data, spatial data, data usage, sensitivity in models, error, presentation of data and results.
Prerequisite: WR 574.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 672 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
WR 695 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
WR 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
WR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
WR 712 Watershed Systems Credits: 3 (2-2-0)
Course Description: Dynamic simulation of watershed behavior; application and evaluation of current hydrologic models.
Prerequisite: (WR 416 or CIVE 322 or ENVE 322) and (STAT 340).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 714 Water Quality for Wildland Managers Credits: 3 (3-0-0)
Course Description: Sampling, statistics of sampling, concepts of ionic equilibrium, water quality modeling, instream flow requirements.
Prerequisite: WR 418.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Ecosystem Science and Sustainability

The major in Ecosystem Science and Sustainability provides a strong scientific foundation in ecosystem ecology integrated with a broad knowledge of the cultural, social, economic, and political issues that are shaping the issue of sustainability. Students in the major learn to integrate science into real-world decision making, with the goal of developing sustainable strategies to maintain ecosystem services around the globe. We provide students with a broad base of experiential and collaborative learning opportunities, opportunities for research through our affiliation with the Natural Resource Ecology Laboratory, and the latest scientific knowledge about how organisms interact with their environments to form complex ecosystems. Students begin their program with core courses that build a strong foundation in the physical and natural sciences. Courses in ecosystem science put that core understanding into the context of our natural resources, with coursework in the classroom, laboratory, and field. Capstone courses task groups of students with proposing cutting-edge solutions for sustainability.

Learning Outcomes

Students in the major are learning:

- How to help people use natural resources in a sustainable way.
- About environmental change at local and global scales.
- How they can identify ways people can adapt to change and improve their lives.
- The amazing connections between different earth system components.
- How to conduct field work in a variety of settings addressing questions important to sustainability.

Potential Occupations

Completion of the undergraduate degree qualifies students for a wide variety of careers related to natural resource science. Examples of possible careers include: sustainability coordinator, ecologist, environmental educator, invasive species specialist, biological science technician, climate change scientist, natural resource specialist, or corporate environmental consultant. Students completing the undergraduate degree in Ecosystem Science and Sustainability will also be well prepared to succeed in graduate education in a variety of disciplines.

Requirements

Effective Fall 2016

Freshman

Select one course from the following:

- ANTH 100 Introductory Cultural Anthropology (GT-SS3) 3C
- AREC 202 Agricultural and Resource Economics (GT-SS1) 3C
- ECON 202 Principles of Microeconomics (GT-SS1) 3C
- POLS 103 State and Local Government and Politics (GT-SS1) 3C
- BUS 150 or CS 110 Business Computing Concepts and Applications/Personal Computing 3-4

Select one group from the following:

Group A:
- BZ 110 Principles of Animal Biology (GT-SC2) 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) 3A

Group B:
- LIFE 102 Attributes of Living Systems (GT-SC1) 3A

Select one course from the following:

Group A:
- CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
- CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A

Group B:
- CHEM 111 General Chemistry I (GT-SC2) 3A
- CHEM 112 General Chemistry Lab I (GT-SC1) 3A
- CO 150 College Composition (GT-CO2) 1A
- ESS 130 System Theory and Information Management 1

Select one course from the following:

- GES 101 Foundations of Environmental Sustainability 3
NR 120A  Environmental Conservation (GT-SC2)  3A
NR 120B  Environmental Conservation

Select one course from the following:  4
   MATH 155  Calculus for Biological Scientists I (GT-MA1)  1B
   MATH 160  Calculus for Physical Scientists I (GT-MA1)  1B

Arts and Humanities  3B  3

Total Credits  29-30

**Sophomore**

Select one course from the following:  3
   AGRI 270/IE 270  World Interdependence-Population and Food (GT-SS3)  3E
   ANTH 200  Cultures and the Global System (GT-SS3)  3E
   HORT 171/SOCR 171  Environmental Issues in Agriculture (GT-SS3)  3E
   POLS 232  International Relations (GT-SS1)  3E
   BZ 120 or LIFE 103  Principles of Plant Biology (GT-SC1)  3A  4
   Biology of Organisms-Animals and Plants
   ESS 210/GR 210  Physical Geography  3
   ESS 211  Foundations in Ecosystem Science  3

Select one from the following:  3-4
   GEO 120  Exploring Earth: Physical Geology (GT-SC2)  3A
   GEO 122  The Blue Planet: Geology of Our Environment (GT-SC2)  3A
   GEO 124  Geology of Natural Resources (GT-SC2)  3A
   SOCR 240  Introductory Soil Science
   NRRT 262  Principles of Environmental Communication  3

Select one course from the following:  5
   PH 121  General Physics I (GT-SC1)  3A
   PH 141  Physics for Scientists and Engineers I (GT-SC1)  3A

Select one course from the following:  3
   STAT 301  Introduction to Statistical Methods
   STAT 307  Introduction to Biostatistics

Total Credits  27-28

**Summer**

NR 220  Natural Resource Ecology and Measurements  5

Total Credits  5

**Junior**

Select one course from the following:  3
   CO 301B  Writing in the Disciplines: Sciences (GT-CO3)  2
   CO 301C  Writing in the Disciplines: Social Sciences (GT-CO3)  2
   JTC 300  Professional and Technical Communication (GT-CO3)  2
   LB 300  Specialized Professional Writing  2
   ESS 311  Ecosystem Ecology  3
   ESS 330  Quantitative Reasoning for Ecosystem Science  3
   GR 304/WR 304  Sustainable Watersheds  3A  3
   GR 420 or NR 322  Spatial Analysis with GIS
   Introduction to Geographic Information Systems  4
   NRRT 330  Social Aspects of Natural Resource Management  3

Arts and Humanities  3B  3
Historical Perspectives  3D  3
Electives  6

Total Credits  31
## Senior

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ESS 400</td>
<td>Sustainability and Ecosystem Science</td>
<td>4A</td>
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<tr>
<td>ESS 411</td>
<td>Earth Systems Ecology</td>
<td>4B</td>
</tr>
<tr>
<td>ESS 440</td>
<td>Practicing Sustainability</td>
<td>4C</td>
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<tr>
<td>ESS 486</td>
<td>Ecosystem Practicum</td>
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<tr>
<td>GR 323/NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
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</tbody>
</table>

ESS Electives<sup>1</sup> | 9 |

**Total Credits**: 26-28

1. Select from department list of courses with approval of advisor.
2. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Freshman

#### Semester 1

<table>
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<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
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<tr>
<td>BUS 150</td>
<td>Business Computing Concepts and Applications</td>
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<tr>
<td>CS 110</td>
<td>Personal Computing</td>
<td></td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-C02)</td>
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<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
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<td></td>
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<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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<td>Group B:</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>Select one course from the following:</td>
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<td>NR 120A</td>
<td>Environmental Conservation (GT-SC2)</td>
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<tr>
<td>NR 120B</td>
<td>Environmental Conservation</td>
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<tr>
<td>GES 101</td>
<td>Foundations of Environmental Sustainability</td>
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**Total Credits**: 13-14

#### Semester 2

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<td>Group A:</td>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>Group B:</td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>ESS 130</td>
<td>System Theory and Information Management</td>
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<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<td>1B</td>
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<td>Select one course from the following:</td>
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<td>ANTH 100</td>
<td>Introductory Cultural Anthropology (GT-SS3)</td>
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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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</tr>
<tr>
<td>POLS 103</td>
<td>State and Local Government and Politics (GT-SS1)</td>
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<td>3C</td>
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</table>

**Program Total Credits**: 120
Arts and Humanities 3B 3
BZ 110 / BZ 111 or LIFE 102, CO 150, and AUCC 1B (MATH) must be completed by the end of Semester 2.

| Total Credits | 16 |

| **Sophomore** |
| **Semester 3** | Critical | Recommended | AUCC | Credits |
| Select one course from the following: | X | | | 4 |
| BZ 120 | Principles of Plant Biology (GT-SC1) | 3A | |
| LIFE 103 | Biology of Organisms-Animals and Plants | | |
| ESS 210/GR 210 | Physical Geography | X | 3 |
| NRRT 262 | Principles of Environmental Communication | | 3 |
| Select one course from the following: | X | | | 3 |
| AGRI 270/IE 270 | World Interdependence-Population and Food (GT-SS3) | 3E | |
| ANTH 200 | Cultures and the Global System (GT-SS3) | 3E | |
| HORT 171/SOCR 171 | Environmental Issues in Agriculture (GT-SS3) | 3E | |
| POLS 232 | International Relations (GT-SS1) | 3E | |
| CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112 must be completed by the end of Semester 3. | | | X |
| Total Credits | 13 |

| **Semester 4** | Critical | Recommended | AUCC | Credits |
| ESS 211 | Foundations in Ecosystem Science | X | 3 |
| Select one course from the following: | X | | | 5 |
| PH 121 | General Physics I (GT-SC1) | 3A | |
| PH 141 | Physics for Scientists and Engineers I (GT-SC1) | 3A | |
| Select one course from the following: | X | | | 3 |
| STAT 301 | Introduction to Statistical Methods | | |
| STAT 307 | Introduction to Biostatistics | | |
| Select one course from the following: | X | | | 3-4 |
| GEOL 120 | Exploring Earth: Physical Geology (GT-SC2) | 3A | |
| GEOL 122 | The Blue Planet: Geology of Our Environment (GT-SC2) | 3A | |
| GEOL 124 | Geology of Natural Resources (GT-SC2) | 3A | |
| SOCR 240 | Introductory Soil Science | | |
| Total Credits | 14-15 |

| **Semester 5** | Critical | Recommended | AUCC | Credits |
| NR 220 | Natural Resource Ecology and Measurements | X | 5 |
| Total Credits | 5 |

| **Junior** |
| **Semester 6** | Critical | Recommended | AUCC | Credits |
| ESS 311 | Ecosystem Ecology | X | 3 |
| Select one course from the following: | X | | | 4 |
| NR 322 | Introduction to Geographic Information Systems | | |
| GR 420 | Spatial Analysis with GIS | | |
| NRRT 330 | Social Aspects of Natural Resource Management | | 3 |
| Historical Perspectives | 3D | 3 |
| Elective | | 3 |
| Total Credits | 16 |

| **Semester 7** | Critical | Recommended | AUCC | Credits |
| ESS 330 | Quantitative Reasoning for Ecosystem Science | X | 3 |
| GR 304/WR 304 | Sustainable Watersheds | 3A | 3 |
| Select one course from the following: | X | | | 3 |
| CO 301B | Writing in the Disciplines: Sciences (GT-CO3) | 2 |
Major in Watershed Science

Watershed Science is the interdisciplinary study of the natural processes and human activities that affect freshwater resources. Water is a critical component of Earth's ecosystems and is used for human consumption, agriculture, energy production, transportation, and recreation. Sustainable management of freshwater resources is an increasingly important and complex challenge in Colorado and worldwide. The major in Watershed Science focuses on the physical, chemical, social, and biological factors that affect the quantity, quality, and flux of water through engagement in the field, laboratory, and classroom. Students begin their program with core courses that build a strong foundation in the physical and natural sciences in preparation for upper-division coursework in land use and snow hydrology, water quality, and watershed problem analysis. Courses emphasize field learning and technical skills, with core classes emphasizing watershed measurements, data analysis, modeling, and research.

Learning Outcomes

Students will:

• Demonstrate understanding of the key concepts in watershed science including surface and subsurface hydrology and water quality.

• Demonstrate understanding of land use effects on fresh water resources.

• Develop skills in collection and analysis of meteorological, hydrological, and water quality data.

• Develop skills in watershed problem analysis, including the use of watershed models.

• Demonstrate strong critical thinking, writing, and oral communication skills.

Potential Occupations

Completion of the undergraduate degree qualifies students for a wide variety of careers in hydrology and water resources management. Examples of possible careers include: watershed scientist, hydrologist, water quality analyst, watershed manager, watershed analyst, watershed use specialist, and water conservation specialist. Employment opportunities for graduates are found in consulting firms, governmental agencies, international development and resource management agencies, non-profit organizations, and private industry.

Requirements

Effective Fall 2016

Freshman

Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BUS 150</td>
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<tr>
<td>Business Computing Concepts and Applications</td>
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</table>
Select one course from the following: 4

- CS 110 Personal Computing
- BZ 110 Principles of Animal Biology (GT-SC2)
- BZ 120 Principles of Plant Biology (GT-SC1)
- LIFE 103\(^1\) Biology of Organisms-Animals and Plants

Select one group from the following: 5

**Group A:**
- CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
- CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A

**Group B:**
- CHEM 111 General Chemistry I (GT-SC2) 3A
- CHEM 112 General Chemistry Lab I (GT-SC1) 3A
- CO 150 College Composition (GT-CO2) 1A
- ESS 130 System Theory and Information Management 1

Select one course from the following: 3-4

- GEO 120 Exploring Earth: Physical Geology (GT-SC2) 3A
- GEO 122 The Blue Planet: Geology of Our Environment (GT-SC2) 3A
- GEO 124 Geology of Natural Resources (GT-SC2) 3A
- GEO 150 Physical Geology for Scientists and Engineers

Select one course from the following: 4

- MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B
- MATH 160 Calculus for Physical Scientists I (GT-MA1) 1B
- Arts and Humanities 3B
- Global and Cultural Awareness 3E

Total Credits 29-31

### Sophomore

Select one course from the following: 3

- CO 301B Writing in the Disciplines: Sciences (GT-CO3) 2
- JTC 300 Professional and Technical Communication (GT-CO3) 2
- LB 300 Specialized Professional Writing 2
- ESS 210/GR 210 Physical Geography 3
- GR 304/WR 304 Sustainable Watersheds 3A

Select one course from the following: 3

- ESS 211 Foundations in Ecosystem Science
- LIFE 320 Ecology

Select one course from the following: 4

- MATH 161 Calculus for Physical Scientists II (GT-MA1) 1B
- MATH 255 Calculus for Biological Scientists II (GT-MA1) 1B
- NR 322 Introduction to Geographic Information Systems 4

Select one course from the following: 5

- PH 121 General Physics I (GT-SC1) 3A
- PH 141 Physics for Scientists and Engineers I (GT-SC1) 3A
- SOCR 240 Introductory Soil Science 4

Total Credits 29

### Summer

- NR 220 Natural Resource Ecology and Measurements 5

Total Credits 5

### Junior

- AREC 342 Water Law, Policy, and Institutions 3
**Major in Watershed Science**

<table>
<thead>
<tr>
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<tr>
<td>ESS 330</td>
<td>Quantitative Reasoning for Ecosystem Science</td>
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<tr>
<td>SOCR 470</td>
<td>Soil Physics</td>
<td>3</td>
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<tr>
<td>SOCR 471</td>
<td>Soil Physics Laboratory</td>
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<td>STAT 301 or 315</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>WR 418²</td>
<td>Land Use and Water Quality</td>
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<td>WR 419</td>
<td>Water Quality Laboratory for Wildland Managers</td>
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<td>Watershed Science Department List selection (select 3 credits from list below)³</td>
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<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
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<td>Historical Perspectives</td>
<td>3D</td>
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<td>Social and Behavioral Sciences</td>
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**Total Credits** 30

**Senior**

Select one course from the following:

- SOCR 322 Principles of Microclimatology 3
- WR 474 Snow Hydrology 3
- WR 416² Land Use Hydrology 4B 3
- WR 417² Watershed Measurements 3
- WR 440 Watershed Problem Analysis 4A,4B,4C 3
- WR 486 Watershed Field Practicum 2

Watershed Science Department List selection (select 9 credits from list below)³ 6

Electives⁴ 5-7

**Total Credits** 25-27

Watershed Science Department List

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<td><strong>Earth Sciences</strong></td>
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<td>ATS 351</td>
<td>Introduction to Weather and Climate Laboratory</td>
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<td>CIVE 322</td>
<td>Basic Hydrology</td>
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<td>CIVE 413</td>
<td>Environmental River Mechanics</td>
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<td>CIVE 423</td>
<td>Groundwater Engineering</td>
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<td>CIVE 425</td>
<td>Soil and Water Engineering</td>
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<td>CIVE 440</td>
<td>Nonpoint Source Pollution</td>
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<td>GEOL 452</td>
<td>Hydrogeology</td>
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<td>GR 323/NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
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<td>NR 422</td>
<td>GIS Applications in Natural Resource Management</td>
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<td>SOCR 440</td>
<td>Pedology</td>
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<td>WR 406</td>
<td>Seasonal Snow Environments</td>
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<td>WR 474</td>
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<td><strong>Ecology</strong></td>
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<td>BSPM 445</td>
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<td>BZ 440</td>
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<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
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<td>BZ 472</td>
<td>Stream Biology and Ecology Laboratory</td>
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<td>BZ 474</td>
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<td>CIVE 330</td>
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**Program Total Credits:** 120
Ecosystem Ecology
Earth Systems Ecology
Ecological Restoration

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<td>ESS 411</td>
<td>Earth Systems Ecology</td>
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<td>RS 478</td>
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**Sustainability**

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<td>ESS 400</td>
<td>Sustainability and Ecosystem Science</td>
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<td>NR 310</td>
<td>Ecosystem Services and Human Well-Being</td>
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<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<td>NRRT 330</td>
<td>Social Aspects of Natural Resource Management</td>
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<td>NRRT 362</td>
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<td>SOC 461</td>
<td>Water, Society, and Environment</td>
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1 LIFE 102 or equivalent is required to take LIFE 103.
2 Partially satisfies requirements of the Water Resources Interdisciplinary Studies Program.
3 Select courses not taken elsewhere in the program from the Watershed Science Department List, for a program minimum total of 9 credits.
4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program**: This program assumes that students will either test out of or take the prerequisite Mathematics courses (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126) prior to the courses listed in this plan.

### Freshman

#### Semester 1

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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>X</td>
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<td>&amp; BZ 111</td>
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<td>BZ 120</td>
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<td>GEOL 150</td>
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**Total Credits**: 13-15

#### Semester 2

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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>CHEM 111</td>
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<td>CHEM 112</td>
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<td>ESS 130</td>
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<tr>
<td>Global and Cultural Awareness</td>
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**Total Credits**: 13-15
CO 150 and AUCC 1B (MATH) requirement must be completed by the end of Semester 2.

| Total Credits | 16 |

**Sophomore**

**Semester 3**

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<tr>
<td>ESS 210/GR 210 Physical Geography</td>
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<td>MATH 161 Calculus for Physical Scientists II (GT-MA1)</td>
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<td>MATH 255 Calculus for Biological Scientists II (GT-MA1)</td>
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<td>NR 322 Introduction to Geographic Information Systems</td>
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<td>SOCR 240 Introductory Soil Science</td>
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| Total Credits | 15 |

**Semester 4**

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<td>LIFE 320 Ecology</td>
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<td>PH 121 General Physics I (GT-SC1)</td>
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<td>PH 141 Physics for Scientists and Engineers I (GT-SC1)</td>
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<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
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| Total Credits | 14 |

**Semester 5**

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| Total Credits | 5 |

**Junior**

**Semester 6**

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<td>SOCR 470 Soil Physics</td>
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<td>SOCR 471 Soil Physics Laboratory</td>
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<td>STAT 301 Introduction to Statistical Methods</td>
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<td>STAT 315 Statistics for Engineers and Scientists</td>
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<td>Arts and Humanities</td>
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<td>Historical Perspectives</td>
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| Total Credits | 13 |

**Semester 7**

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<td>ESS 330 Quantitative Reasoning for Ecosystem Science</td>
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<td>WR 418 Land Use and Water Quality</td>
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<td>WR 419 Water Quality Laboratory for Wildland Managers</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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| Total Credits | 17 |

**Senior**

**Semester 8**

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<td>WR 416 Land Use Hydrology</td>
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WR 417  Watershed Measurements   X   3
WR 486  Watershed Field Practicum  X   2
Select one course from the following:
  SOCR 322  Principles of Microclimatology  3
  WR 474  Snow Hydrology
Watershed Science Department List selection (See Department List on Requirements tab).  3

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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>WR 440  Watershed Problem Analysis  X</td>
<td>4A,4B,4C</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>Watershed Science Department List selection (See Department List on Requirements tab).  X</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Electives X</td>
<td></td>
<td>5-7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The benchmark courses for the 9th semester are the remaining courses in the entire program of study.  X</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Total Credits</th>
<th>14</th>
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</table>

Semester 9

Minor in Watershed Science

The minor in Watershed Science provides a background in core classes addressing land use hydrology and sustainable watersheds, and providing students with an experiential learning opportunity in the watershed practicum field course. The minor offers a broad and flexible selection of additional coursework that emphasize physical, bio-chemical, and societal aspects of water. Students can select the combination of courses that best fits their interests and complements their major.

Requirements

Effective Spring 2013

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Division</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESS 210/GR 210</td>
<td>Physical Geography</td>
<td>3-4</td>
</tr>
<tr>
<td>or GEOL 150</td>
<td>Physical Geology for Scientists and Engineers</td>
<td></td>
</tr>
<tr>
<td>Upper Division</td>
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<td>10</td>
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<tr>
<td>Select at least 10 credits from the following:</td>
<td></td>
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<tr>
<td>AREC 342</td>
<td>Water Law, Policy, and Institutions</td>
<td></td>
</tr>
<tr>
<td>ATS 350</td>
<td>Introduction to Weather and Climate</td>
<td></td>
</tr>
<tr>
<td>CIVE 322/ENVE 322</td>
<td>Basic Hydrology</td>
<td></td>
</tr>
<tr>
<td>CIVE 413</td>
<td>Environmental River Mechanics</td>
<td></td>
</tr>
<tr>
<td>CIVE 423</td>
<td>Groundwater Engineering</td>
<td></td>
</tr>
<tr>
<td>CIVE 440</td>
<td>Nonpoint Source Pollution</td>
<td></td>
</tr>
<tr>
<td>GEO 452</td>
<td>Hydrogeology</td>
<td></td>
</tr>
<tr>
<td>GEO 454</td>
<td>Geomorphology</td>
<td></td>
</tr>
<tr>
<td>SOCR 322</td>
<td>Principles of Microclimatology</td>
<td></td>
</tr>
<tr>
<td>SOCR 470</td>
<td>Soil Physics</td>
<td></td>
</tr>
<tr>
<td>SOCR 471</td>
<td>Soil Physics Laboratory</td>
<td></td>
</tr>
<tr>
<td>SOC 461</td>
<td>Water, Society, and Environment</td>
<td></td>
</tr>
<tr>
<td>WR 406</td>
<td>Seasonal Snow Environments</td>
<td></td>
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<tr>
<td>WR 417</td>
<td>Watershed Measurements</td>
<td></td>
</tr>
<tr>
<td>WR 418</td>
<td>Land Use and Water Quality</td>
<td></td>
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<tr>
<td>WR 419</td>
<td>Water Quality Laboratory for Wildland Managers</td>
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<tr>
<td>WR 474</td>
<td>Snow Hydrology</td>
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Master of Greenhouse Gas Management and Accounting, Plan C (M.G.M.A)

Requirements
Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ESS 501</td>
<td>Principles of Ecosystem Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>ESS 524</td>
<td>Foundations for Carbon/Greenhouse Gas Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>ESS 542</td>
<td>Greenhouse Gas Policies</td>
<td>2</td>
</tr>
<tr>
<td>ESS 543/ATS 543</td>
<td>Current Topics in Climate Change</td>
<td>2</td>
</tr>
<tr>
<td>ESS 545</td>
<td>Applications in Greenhouse Gas Inventories</td>
<td>4</td>
</tr>
<tr>
<td>ESS 587</td>
<td>Internship</td>
<td>4</td>
</tr>
<tr>
<td>STAT 511</td>
<td>Design and Data Analysis for Researchers I</td>
<td>4</td>
</tr>
<tr>
<td>Quantitative Methods</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Greenhouse Gas Specialization</td>
<td></td>
<td>6</td>
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<tr>
<td>Technical Tools</td>
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<td>6</td>
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<tr>
<td>Total Credits</td>
<td>37</td>
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</table>

A minimum of 37 credits are required to complete this program.

1. Select courses with approval of advisor and graduate committee.
2. Select two courses in ANEQ, F, RS, SOCR, or other area of specialization with approval of advisor and graduate committee.
3. Select two courses from GIS and/or remote sensing with approval of advisor and graduate committee.

A minimum of 37 credits are required to complete this program.

Undergraduate Majors
- Major in Fish, Wildlife, and Conservation Biology
  - Conservation Biology Concentration
  - Fisheries and Aquatic Sciences Concentration
  - Wildlife Biology Concentration

Minors
- Minor in Fishery Biology

Graduate Programs in Fish, Wildlife, and Conservation Biology

Graduate programs lead to a fish, wildlife, and conservation biology, Master of Science, and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Fish, Wildlife, and Conservation Biology (http://warnercnr.colostate.edu/departments/fwcb-graduate-study/graduate-program).

Master Program
- Master of Science in Fish, Wildlife, and Conservation Biology, Plan A*
- Master of Science in Fish, Wildlife, and Conservation Biology, Plan B*
- Ph.D. in Fish, Wildlife, and Conservation Biology*
- Master of Fish, Wildlife, and Conservation Biology, Plan C (M.F.W.C.B.)

* Please see department for program of study.
## Courses

### Fish, Wildlife, and Conservation Biology (FW)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite</th>
<th>Registration Information</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Additional Information</th>
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<tbody>
<tr>
<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
<td>3 (3-0-0)</td>
<td>None</td>
<td>Sections may be offered: Online</td>
<td>Traditional</td>
<td>No</td>
<td>No</td>
<td>Biological &amp; Physical Sciences 3A, Natural &amp; Physical Sciences w/o lab (GT-SC2).</td>
</tr>
<tr>
<td>FW 111</td>
<td>Basic Outdoor Skills in FWCB</td>
<td>1 (.5-1-0)</td>
<td>None</td>
<td>Must register for lecture and laboratory. May be taken up to 3 times for a maximum of 3 credits. Required field trips.</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>Yes</td>
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<tr>
<td>FW 179</td>
<td>New-to-the-Major Seminar</td>
<td>1 (0-0-1)</td>
<td>None</td>
<td>This is a partial semester course.</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No</td>
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<tr>
<td>FW 204</td>
<td>Introduction to Fishery Biology</td>
<td>3 (2-3-0)</td>
<td>None</td>
<td>Must register for lecture and laboratory. Required field trips.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
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<tr>
<td>FW 260</td>
<td>Principles of Wildlife Management</td>
<td>3 (3-0-0)</td>
<td>(MATH 124 or MATH 160) and (BZ 110 or LIFE 103).</td>
<td>Must register for lecture and laboratory. Required field trips.</td>
<td>Fall, Spring</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
<td>2 (2-0-0)</td>
<td>BZ 111 or LIFE 103.</td>
<td></td>
<td>Spring</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>FW 301</td>
<td>Ichthyology Laboratory</td>
<td>1 (0-2-0)</td>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td></td>
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<tr>
<td>FW 350</td>
<td>Teaching Shooting Responsibility</td>
<td>4 (3-2-0)</td>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>FW 355</td>
<td>Hunter Education for Instructors.</td>
<td>2 (0-0-2)</td>
<td>(FW 260 or FW 360) and (NR 220) and (MATH 155 or MATH 160) and (STAT 301 or STAT 307).</td>
<td>Offered as a correspondence course only.</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>FW 370</td>
<td>Design of Fish and Wildlife Projects</td>
<td>3 (2-2-0)</td>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>FW 375</td>
<td>Field Wildlife Studies</td>
<td>3 (1-4-0)</td>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>FW 376</td>
<td>Travel Abroad: Wildlife Conservation</td>
<td>3 (0-0-3)</td>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

FW 300 may be taken concurrently.
FW 384  Supervised College Teaching  Credits: Var[1-5]  (0-0-0)
Course Description: Instruction and practice in laboratory instruction in lower-division departmental courses.
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 400  Conservation of Fish in Aquatic Ecosystems  Credits: 3 (2-0-1)
Course Description: Ecological processes that create habitat and biotic template for fish in aquatic ecosystems; human effects; strategies for conserving fishes.
Prerequisite: LIFE 320 and FW 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 401  Fishery Science  Credits: 3 (2-3-0)
Course Description: Theory, philosophy, and applications for study and management of fishery resources.
Prerequisite: (FW 300) and (STAT 301 or STAT 307 or ERHS 307) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Computer literacy. Must register for lecture and laboratory.
Term Offered: Fall.
GradeModes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

FW 402  Fish Culture  Credits: 4 (3-2-0)
Course Description: Principles and practices to produce food, bait, and sport fishes.
Prerequisite: FW 300.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 405  Fish Physiology  Credits: 3 (2-3-0)
Course Description: Physiological ecology of fish; functional adaptations and adjustments used to cope with environmental and physiological states.
Prerequisite: BZ 214 or FW 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both FW 405 and FW 605.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 455  Principles of Conservation Biology  Credits: 3 (3-0-0)
Course Description: Review of efforts to study and conserve biological diversity, focused on fish and wildlife populations.
Prerequisite: (FW 260 and LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Credit allowed for only one of the following courses: NR 300 or FW 455. Credit not allowed for both FW 455 and FW 555.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 465  Managing Human-Wildlife Conflicts  Credits: 3 (2-2-0)
Course Description: Methods for resolving conflicts caused by wildlife; integrating animal behavior, population dynamics, economics, and human dimensions into solutions.
Prerequisite: FW 260.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 466  Wild Bird Management  Credits: 3 (2-3-0)
Course Description: Ecology and management of game, pest, and rare bird populations and nongame bird communities.
Prerequisite: FW 260.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 467  Wildlife Disease Ecology  Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: LIFE 320.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 468  Conservation of Fish in Aquatic Ecosystems  Credits: 3 (2-0-1)
Course Description: Ecological processes that create habitat and biotic template for fish in aquatic ecosystems; human effects; strategies for conserving fishes.
Prerequisite: LIFE 320 and FW 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 469  Conservation and Management of Large Mammals  Credits: 3 (3-0-0)
Course Description: Principles of behavior, ecology, population dynamics, and conservation related to large mammals.
Prerequisite: (BZ 330 and FW 260 and LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 471  Wildlife Data Collection and Analysis  Credits: 4 (2-4-0)
Course Description: Analysis methods used in wildlife management and research; adaptive resource management with emphasis on learning through field and computer labs.
Prerequisite: FW 370 and NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 472  Issues in Animal Conservation and Management  Credits: 3 (2-0-1)
Course Description: Current and emerging issues in fish and wildlife conservation and management at the state, national, and global scales.
Prerequisite: (FW 260) and (LIFE 320).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FW 475 Conservation Decision Making  Credits: 3 (3-0-0)
Course Description: Structured approaches to conservation and management of vertebrates; articulating objectives, developing management options, and predicting outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 477 Wildlife Habitat Use and Management  Credits: 3 (1-3-1)
Course Description: Wildlife habitat evaluation, classification, and improvement; analysis of habitat use patterns; planning and implementation of management plans.
Prerequisite: (FW 260) and (NR 319 or NR 322).
Registration Information: Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 482A Travel Abroad: Conserving Desert/Marine Animals  Credits: 3 (0-0-3)
Course Description: Ecology of desert and marine animals and application to problems of animal conservation.
Prerequisite: LIFE 320.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 487 Internship  Credits: Var[1-6] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 492 Seminar-Wildlife Biology  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 495A Independent Study: Fishery Biology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LIFE 320 or FW 104 or NR 220 or LAND 220 or LIFE 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 495B Independent Study: Wildlife Biology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496A Group Study: Fishery Biology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496B Group Study: Wildlife Biology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: LAND 220 or LIFE 320 or FW 104 or NR 220 or LIFE 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 540 Fisheries Ecology  Credits: 3 (2-0-1)
Course Description: Population, community, and ecosystem management for fishes and other aquatic organisms in freshwater habitats.
Prerequisite: None.
Registration Information: One course in fishery science; one course in aquatic ecology. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 544 Ecotoxicology  Credits: 3 (2-0-1)
Course Description: Ecological effects of contaminants on populations, communities, and ecosystems.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 551 Design of Fish and Wildlife Studies  Credits: 3 (2-0-1)
Course Description: Principles, types of studies, and philosophy of science in design of experimental, observational, and sampling studies for wildlife investigations.
Prerequisite: STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 552 Applied Sampling for Wildlife/Fish Studies  Credits: 3 (2-0-1)
Course Description: Survey sampling theory and techniques, including distance sampling, with emphasis on wildlife and fish studies.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Must register for lecture and recitation. Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 553 Adaptive Fish and Wildlife Management  Credits: 3 (2-2-0)
Course Description: Formal approaches to making management decisions about wildlife and fish populations, using tools of decision analysis.
Prerequisite: FW 401 or FW 471.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
FW 555  Conservation Biology  Credits: 3 (2-0-1)
Course Description: Ecological factors in conservation of biological diversity.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 307).
Registration Information: Credit not allowed for both FW 555 and FW 455. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 557  Wildlife Habitat Management on Private Land  Credits: 3 (0-0-3)
Course Description: Management of cover, food, and water for wildlife and fish in the Great Plains. Emphasis on practices compatible with other uses of private land.
Prerequisite: None.
Registration Information: Bachelor’s degree, or any level ecology or wildlife management course, or written consent of instructor. Offered online only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561A  Advanced Topics: Fishery Biology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 561B  Advanced Topics: Wildlife Biology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561C  Advanced Topics: Population Analysis  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561E  Advanced Topics: Vertebrate Management  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 564  Science of Managing Human-Wildlife Conflicts  Credits: 3 (2-0-1)
Course Description: Human-wildlife conflicts, and in particular, damage caused by wildlife, often termed wildlife damage. Topics such as animal behaviors, population dynamics, public attitudes, economics, and effective strategies in understanding the various types of conflicts and how to manage them.
Prerequisite: BZ 110 or LIFE 102 or LIFE 103 or LIFE 220 or LIFE 320 or FW 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 567  Wildlife Disease Ecology  Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 573  Travel Abroad-Wildlife Ecology/Conservation  Credits: 3 (3-0-0)
Course Description: Study tour of various overseas ecosystems and natural resources conservation programs; discussions with local ecologists/managers.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 575  Wildlife Habitat Evaluation for Educators  Credits: 3 (0-0-3)
Course Description: Teachers or leaders implement wildlife habitat evaluation procedures in classroom or community programs and evaluate performance of students.
Prerequisite: None.
Registration Information: Graduate standing. Offered as a correspondence course only.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 576  Wildlife Policy, Administration, and Law  Credits: 3 (0-0-3)
Course Description: Evolution of policy affecting wildlife and humans using historical, current, philosophical, legal, and administrative constructs.
Prerequisite: None.
Registration Information: Required: one course in political science; one course in natural resources management. Offered as a correspondence course only.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FW 577 Management of Wildlife Habitat Credits: 3 (2-0-1)
Course Description: Identifying and implementing management techniques for evaluating, classifying, and improving wildlife habitat to sustain and conserve populations.
Prerequisite: (FW 260) and (GR 311 or GR 323 or NR 323 or GR 420 or NR 319 or NR 322 or NR 422 or SOCR 377).
Registration Information: Written consent of instructor. Must register for lecture and recitation. Offered as an online course only. Admission to graduate program in Fish, Wildlife, and Conservation Biology. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 578 Conservation Decision Analysis Credits: 3 (2-0-1)
Course Description: Identifying decision making processes and adaptive management techniques used in conservation; consideration of objectives, options and outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Offered as an online course only. Written consent of instructor. Must register for lecture and recitation. Admission to a graduate program in Fish, Wildlife, and Conservation Biology.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 605 Advanced Physiological Ecology of Fishes Credits: 4 (2-3-1)
Course Description: Physiological ecology of fishes; functional adaptations and adjustments used to cope with environmental and physiological states.
Prerequisite: FW 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both FW 605 and FW 405.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 662 Wildlife Population Dynamics Credits: 3 (1-2-1)
Course Description: Population models; experimental evidence and analysis of theories of population regulation; case studies.
Prerequisite: (FW 260 and STAT 301) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 663 Sampling and Analysis of Vertebrate Populations Credits: 5 (3-3-1)
Course Description: Sampling and analysis of fish and wildlife populations, including survival estimation, capture-recapture sampling, and transect sampling.
Prerequisite: FW 260 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 673 Hierarchical Modeling in Ecology Credits: 3 (3-0-0)
Also Offered As: STAT 673.
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FW 673 and STAT 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 677 Wildlife Habitat Management Credits: 3 (1-3-1)
Course Description: Habitat models; vegetation manipulation and monitoring for wildlife; extended field trips.
Prerequisite: FW 260.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Must register for lecture, laboratory and recitation.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 692 Seminar: Fish, Wildlife, and Conservation Biology Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695A Independent Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FW 696 Group Study: Fish, Wildlife, Conservation Biology  Credits: Var[1-18] (0-0-0)
Course Description: Group study projects on topics in fish, wildlife, and conservation biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698A Research: Fishery Biology  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698B Research: Wildlife Biology  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699A Thesis: Fishery Biology  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699B Thesis: Wildlife Biology  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 799A Dissertation: Fishery Biology  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 799B Dissertation: Wildlife Biology  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Fish, Wildlife, and Conservation Biology

Professor Will Clements
Chair of the Undergraduate Major

Fish, Wildlife, and Conservation Biology is intended for students interested in understanding wildlife and the habitats in which they live. We offer three concentrations: Conservation Biology, Fisheries and Aquatic Sciences, and Wildlife Biology. The curriculum has a strong foundation in the biological, physical, and social sciences with the focus on solving current and future issues related to conservation and sustainability of wild animals and their habitats. The faculty offers a wide range of expertise with a keen interest in innovative teaching and research methods. Our program prepares students for professional careers involving fish, wildlife, and conservation that include federal and state agencies, nongovernmental organizations, the private sector, academic institutions, and graduate school. Numerous opportunities exist for students to get experience through research and internships, including professional and career mentoring and involvement with professional societies to further their studies, practical experience, and career potential. A summer field course at CSU's Mountain Campus is required and provides students with hands-on learning about natural resource ecology and measurements. Required natural science courses include general biology, vertebrate biology, botany, calculus, and statistics, while required courses in the major focus on wildlife ecology and conservation, principles of wildlife management, design of wildlife projects, conservation biology, fishery science, and wildlife data collection and analysis. Required courses in the concentrations as well as elective courses explore specific areas of fish, wildlife, and conservation biology. Along with a strong science foundation, problem solving, communication skills and outreach, are important to resolve difficult issues faced by today's natural resource professionals.

Learning Outcomes

Students will:

- Demonstrate mastery of ecological concepts and fundamental principles and techniques to manage and conserve fish and wildlife populations, and how they apply to current natural resource management issues
- Demonstrate mathematical, statistical, and study design knowledge and skills required for careers in fishery, wildlife, and conservation biology
• Become effective in oral and written communication about issues related to the environment and natural resources, including as members of multi-disciplinary teams
• Learn approaches to solving complex natural resource management issues, including planning, organizing, creating, and presenting group projects

Potential Occupations

Federal and state agencies that manage natural resources offer most employment opportunities in fish, wildlife, and conservation biology. Key federal agencies include the U.S. Forest Service, Fish and Wildlife Service, Bureau of Land Management, Geological Survey, National Park Service, Environmental Protection Agency, Bureau of Reclamation, National Marine Fisheries Service, and state departments of wildlife and natural resources. Non-governmental organizations, e.g., The Nature Conservancy, private companies, and environmental consultants also offer excellent opportunities. Participation in internships, independent study/research, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Undergraduates who go on for graduate-level studies can attain more advanced positions with the possibility of rising to top professional levels, e.g., researchers and teachers in academic institutions and scientists at natural resource agencies. Our degree is also excellent preparation for veterinary school.

Examples of career opportunities include, but are not limited to: fishery/wildlife/conservation biologist, ecologist, wildlife refuge or natural resource manager, environmental consultant, research scientist, and educator. Within these areas, a variety of specializations are possible including fish, wildlife, and conservation education and interpretation; endangered species; habitat enhancement and restoration; administration; research; law enforcement, fish and wildlife population assessment, statistical analyst, and human-wildlife conflicts.

Concentrations
• Conservation Biology Concentration
• Fisheries and Aquatic Sciences Concentration
• Wildlife Biology Concentration

Major in Fish, Wildlife, and Conservation Biology, Conservation Biology Concentration

The Conservation Biology concentration focuses on understanding the ecological processes necessary to conserve biological diversity with an emphasis on fish and wildlife species and their habitats.

Requirements

Effective Fall 2015

A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife, and conservation biology and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting these requirements.

Freshman

<table>
<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Select one group from the following:

Group A:
- BZ 110 Principles of Animal Biology (GT-SC2) 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) 3A
- BZ 120 Principles of Plant Biology (GT-SC1) 3A

Group B:
- LIFE 102 Attributes of Living Systems (GT-SC1) 3A
- LIFE 103 Biology of Organisms-Animals and Plants 3A

CO 150 College Composition (GT-CO2) 1A

Select one set of chemistry and physics courses from the following:

Group A:
- CHEM 107 Fundamentals of Chemistry (GT-SC2) 3A
- CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) 3A
- PH 121 General Physics I (GT-SC1) 3A
- PH 122 General Physics II (GT-SC1) 3A

Group B:
- CHEM 111 General Chemistry I (GT-SC2) 3A
- CHEM 112 General Chemistry Lab I (GT-SC1) 3A
- CHEM 113 General Chemistry II
- CHEM 114 General Chemistry Lab II
- PH 110 Descriptive Physics (GT-SC2) 3A
- PH 111 Descriptive Physics Laboratory (GT-SC1) 3A
Major in Fish, Wildlife, and Conservation Biology, Conservation Biology Concentration

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
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</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
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<td>Total Credits</td>
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</table>

**Sophomore**

Select one course from the following:

- BZ 220 Introduction to Evolution
- BZ 346 Population and Evolutionary Genetics
- BZ 350 Molecular and General Genetics
- SOCR 330 Principles of Genetics
- CHEM 245 Fundamentals of Organic Chemistry
- CHEM 246 Fundamentals of Organic Chemistry Laboratory
- FW 260 Principles of Wildlife Management

Select one from the following:

- HONR 499 Senior Honors Thesis
- SPCM 200 Public Speaking
- LIFE 320 Ecology
- MATH 155 or 160 Calculus for Biological Scientists I (GT-MA1) 1B,1B
- MATH 155 or 160 Calculus for Physical Scientists I (GT-MA1) 1B,1B
- STAT 301 or 307 Introduction to Statistical Methods
- STAT 301 or 307 Introduction to Biostatistics

Arts and Humanities 3B 3
Social and Behavioral Sciences 3C 3

Total Credits 30-31

**Summer**

NR 220 Natural Resource Ecology and Measurements 5

Total Credits 5

**Junior**

Select one group from the following:

- **Group A:**
  - BSPM 302 Applied and General Entomology
  - BSPM 303A Entomology Laboratory: General

- **Group B:**
  - BSPM 445 Aquatic Insects

- **Group C:**
  - BZ 212 Animal Biology-Invertebrates

Select two courses or course pair for 6-7 credits not taken elsewhere from the following:

- BZ 214 Animal Biology-Vertebrates
- BZ 329 Herpetology
- BZ 330 Mammalogy
- BZ 335 Ornithology
- FW 300 Biology and Diversity of Fishes
- FW 301

Select one Plant Biology course from the following:

- BZ 223 Plant Identification
- BZ 321 Aquatic Vascular Plants
- BZ 325 Plant Systematics
- BZ 332 Introductory Phycology
- BZ 450 Plant Ecology
- F 310/RS 310 Forest and Rangeland Ecogeography
- F 311 Forest Ecology
NR 326  Forest Vegetation Management

Select one course from the following:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
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<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>FW 370</td>
<td>Design of Fish and Wildlife Projects</td>
<td>3</td>
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</table>

Select one course from the following:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR 319</td>
<td>Geospatial Applications in Natural Resources</td>
<td></td>
</tr>
<tr>
<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
<td></td>
</tr>
<tr>
<td>NR 320</td>
<td>Natural Resources History and Policy</td>
<td>3D</td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
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</table>

Total Credits 29-31

Senior

Select one Aquatic Biology course or course pair not taken elsewhere from the following:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BSPM 445</td>
<td>Aquatic Insects</td>
<td></td>
</tr>
<tr>
<td>BZ 415</td>
<td>Marine Biology</td>
<td></td>
</tr>
<tr>
<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
<td></td>
</tr>
<tr>
<td>&amp; BZ 472</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 474</td>
<td>Limnology</td>
<td></td>
</tr>
<tr>
<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
<td></td>
</tr>
<tr>
<td>&amp; FW 301</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FW 400</td>
<td>Conservation of Fish in Aquatic Ecosystems</td>
<td></td>
</tr>
<tr>
<td>FW 401</td>
<td>Fishery Science</td>
<td></td>
</tr>
<tr>
<td>FW 402</td>
<td>Fish Culture</td>
<td></td>
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<tr>
<td>FW 405</td>
<td>Fish Physiology</td>
<td></td>
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</tbody>
</table>

Select one Wildlife Course not taken elsewhere from the following:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FW 375</td>
<td>Field Wildlife Studies</td>
<td></td>
</tr>
<tr>
<td>FW 455</td>
<td>Principles of Conservation Biology</td>
<td></td>
</tr>
<tr>
<td>FW 465</td>
<td>Managing Human-Wildlife Conflicts</td>
<td></td>
</tr>
<tr>
<td>FW 467</td>
<td>Wildlife Disease Ecology</td>
<td></td>
</tr>
<tr>
<td>FW 469</td>
<td>Conservation and Management of Large Mammals</td>
<td></td>
</tr>
<tr>
<td>FW 471</td>
<td>Wildlife Data Collection and Analysis</td>
<td>4C</td>
</tr>
<tr>
<td>FW 472</td>
<td>Issues in Animal Conservation and Management</td>
<td></td>
</tr>
<tr>
<td>FW 475</td>
<td>Conservation Decision Making</td>
<td></td>
</tr>
<tr>
<td>FW 477</td>
<td>Wildlife Habitat Use and Management</td>
<td></td>
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<tr>
<td>FW 544</td>
<td>Ecotoxicology</td>
<td></td>
</tr>
<tr>
<td>FW 573</td>
<td>Travel Abroad-Wildlife Ecology/Conservation</td>
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<tr>
<td>FW ***</td>
<td>Travel Abroad upper-division course</td>
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</table>

Select one course from the following:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>FW 401</td>
<td>Fishery Science</td>
<td>4C</td>
</tr>
<tr>
<td>FW 471</td>
<td>Wildlife Data Collection and Analysis</td>
<td>4C</td>
</tr>
</tbody>
</table>

Select one course from the following:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>FW 455</td>
<td>Principles of Conservation Biology</td>
<td></td>
</tr>
<tr>
<td>FW 472</td>
<td>Issues in Animal Conservation and Management</td>
<td></td>
</tr>
</tbody>
</table>

Select one Ecosystem Course not taken elsewhere from the following:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
<td></td>
</tr>
<tr>
<td>F 311</td>
<td>Forest Ecology</td>
<td></td>
</tr>
<tr>
<td>F 324</td>
<td>Fire Effects and Adaptations</td>
<td></td>
</tr>
</tbody>
</table>
Major in Fish, Wildlife, and Conservation Biology, Conservation Biology Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>F 326</td>
<td>Wildland Fire Behavior and Management</td>
</tr>
<tr>
<td>FW 477</td>
<td>Wildlife Habitat Use and Management</td>
</tr>
<tr>
<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
</tr>
<tr>
<td>NR 300</td>
<td>Biological Diversity</td>
</tr>
<tr>
<td>NR 326</td>
<td>Forest Vegetation Management</td>
</tr>
<tr>
<td>NR 370</td>
<td>Coastal Environmental Ecology</td>
</tr>
<tr>
<td>NR 440(^2)</td>
<td>Applications in Conservation Planning</td>
</tr>
<tr>
<td>NRRT 439(^2)</td>
<td>Open Space and Natural Area Management</td>
</tr>
<tr>
<td>RS 478(^2)</td>
<td>Ecological Restoration</td>
</tr>
<tr>
<td>WR 416(^2)</td>
<td>Land Use Hydrology</td>
</tr>
<tr>
<td>WR 418</td>
<td>Land Use and Water Quality</td>
</tr>
</tbody>
</table>

Select two Human Dimensions courses not taken elsewhere from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>HIST 355(^2)</td>
<td>American Environmental History</td>
</tr>
<tr>
<td>NR 400</td>
<td>Public Relations in Natural Resources</td>
</tr>
<tr>
<td>NRRT 330</td>
<td>Social Aspects of Natural Resource Management</td>
</tr>
<tr>
<td>NRRT 400(^2)</td>
<td>Environmental Governance</td>
</tr>
<tr>
<td>NRRT 440(^2)</td>
<td>Applications in Environmental Communication</td>
</tr>
<tr>
<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
</tr>
<tr>
<td>PHIL 345</td>
<td>Environmental Ethics</td>
</tr>
<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
</tr>
<tr>
<td>SOC 320</td>
<td>Population-Natural Resources and Environment</td>
</tr>
<tr>
<td>SOC 322</td>
<td>Introduction to Environmental Justice</td>
</tr>
<tr>
<td>SOC 460</td>
<td>Society and Environment</td>
</tr>
<tr>
<td>SOC 461</td>
<td>Water, Society, and Environment</td>
</tr>
</tbody>
</table>

Technical elective\(^6\) | 3-4

Elective\(^7\) | 1-2

Total Credits: 22-27

Program Total Credits: 120-121

---

1. Students taking this biology selection should choose a botany-related course in the department elective options to meet the botany/plant course requirements for certain federal positions related to wildlife, fisheries, and/or conservation biology.
2. Students may need to obtain a registration override from the appropriate department to take this course.
3. Students in the Honors Track 1 program must take HONR 499.
4. FW 300 and FW 301 count together as one selection in this choice.
5. Restricted to FW subject code, department travel abroad courses, taught by FWCB faculty. No transfer or substitute courses will be accepted.
6. Technical electives are courses intended to expand a student’s depth and breadth in wildlife biology and include any 300- or 400-level regular course with a BC, BMS, BSPM, BZ, CHEM, ESS, F, FW, GES, MATH, MIP, NR, NRRT, PH, RS, SOCR, STAT, or WR subject code (excluding courses ending in -80 to -99); SOCR 240; other course with prior approval by department and advisor. Courses may not double-count as Technical Electives and for other requirements in the major.
7. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

---

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

The curriculum for the Fish, Wildlife and Conservation Biology major – Conservation Biology concentration assumes students enter college prepared to take calculus. Students who have not met the prerequisites for calculus, will be required to successfully complete the prerequisites in their first year. A minimum grade of C (2.000) is required in all biological, mathematical / statistical, physical science, fish, wildlife, and conservation biology, and natural resources courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting degree requirements. NR 220 is a summer course in which students reside at CSU’s Mountain
Colorado State University

Students must choose ONE of two CHEM + PH paths: (Path A) CHEM 107/CHEM 108 and PH 121/PH 122 or (Path B) CHEM 111, CHEM 112, CHEM 113, CHEM 114 and PH 110/PH 111. Students must also choose ONE biology group A) BZ 110/BZ 111 or B) LIFE 102/LIFE 103.

### Freshman

#### Semester 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
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<td></td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>BZ 110</td>
<td></td>
<td></td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>BZ 111</td>
<td></td>
<td></td>
<td>3A</td>
<td></td>
</tr>
</tbody>
</table>

Select one group from the following:

**Group A:**
- BZ 110 Principles of Animal Biology (GT-SC2)
- BZ 111 Animal Biology Laboratory (GT-SC1)

**Group B:**
- LIFE 102 Attributes of Living Systems (GT-SC1)

Select one path from the following:

**Path A:**
- PH 121 General Physics I (GT-SC1)

**Path B:**
- CHEM 111 General Chemistry I (GT-SC2)
- CHEM 112 General Chemistry Lab I (GT-SC1)
- FW 104 Wildlife Ecology and Conservation (GT-SC2)

**Total Credits**

### Semester 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 120</td>
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</tr>
<tr>
<td>LIFE 103</td>
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<td></td>
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<td></td>
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</tbody>
</table>

Select one path from the following:

**Path A:**
- CHEM 107 Fundamentals of Chemistry (GT-SC2)
- CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1)
- PH 122 General Physics II (GT-SC1)

**Path B:**
- CHEM 113 General Chemistry II
- CHEM 114 General Chemistry Lab II
- PH 110 Descriptive Physics (GT-SC2)
- PH 111 Descriptive Physics Laboratory (GT-SC1)

**Arts and Humanities**
- CO 150, AUCC 1B (MATH), and MATH 125 must be completed by the end of Semester 1.

**Total Credits**

### Sophomore

#### Semester 3

Select one course from the following:

- BZ 220 Introduction to Evolution
- BZ 346 Population and Evolutionary Genetics
- BZ 350 Molecular and General Genetics
- SOCR 330 Principles of Genetics
- FW 260 Principles of Wildlife Management

Select one course from the following:

**MATH 155** Calculus for Biological Scientists I (GT-MA1) 1B
**MATH 160** Calculus for Physical Scientists I (GT-MA1) 1B
**CHEM 245** Fundamentals of Organic Chemistry 4

**Total Credits**
**Semester 4**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HONR 499</td>
<td>Senior Honors Thesis</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>X</td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
</tbody>
</table>

Arts and Humanities: 3B

Social and Behavioral Sciences: 3C

FW 260 must be completed by the end of Semester 4.

**Total Credits**: 15

**Semester 5**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
<td>5</td>
</tr>
</tbody>
</table>

**Total Credits**: 5

**Junior**

**Semester 6**

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR 319</td>
<td>Geospatial Applications in Natural Resources</td>
<td></td>
</tr>
<tr>
<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
<td>X</td>
</tr>
<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
<td>2</td>
</tr>
<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
<td>2</td>
</tr>
</tbody>
</table>

Select one group from the following:

**Group A:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSPM 302</td>
<td>Applied and General Entomology</td>
</tr>
<tr>
<td>BSPM 303A</td>
<td>Entomology Laboratory: General</td>
</tr>
</tbody>
</table>

**Group B:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSPM 445</td>
<td>Aquatic Insects</td>
</tr>
</tbody>
</table>

**Group C:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 212</td>
<td>Animal Biology-Invertebrates</td>
</tr>
</tbody>
</table>

Select one group from the following:

**Group A:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 214</td>
<td>Animal Biology-Vertebrates</td>
</tr>
</tbody>
</table>

**Group B:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 329</td>
<td>Herpetology</td>
</tr>
</tbody>
</table>

**Group C:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 330</td>
<td>Mammalogy</td>
</tr>
</tbody>
</table>

**Group D:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 335</td>
<td>Ornithology</td>
</tr>
</tbody>
</table>

**Group E:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
</tr>
<tr>
<td>FW 301</td>
<td>Ichthyology Laboratory</td>
</tr>
</tbody>
</table>

STAT 301 or STAT 307 and LIFE 320 must be completed by the end of Semester 6.

**Total Credits**: 14-15
## Semester 7

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW 370</td>
<td>Design of Fish and Wildlife Projects</td>
<td></td>
<td>X</td>
<td>4A,4B</td>
<td>3</td>
</tr>
<tr>
<td>NR 320</td>
<td>Natural Resources History and Policy</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one group from the following:

**Group A:**
- BZ 214 Animal Biology-Vertebrates

**Group B:**
- BZ 329 Herpetology

**Group C:**
- BZ 330 Mammalogy

**Group D:**
- BZ 335 Ornithology

**Group E:**
- FW 300 Biology and Diversity of Fishes
- FW 301 Ichthyology Laboratory

Global and Cultural Awareness: 3E, 3 credits

Plant Biology Elective Course (See Department List on Concentration Requirements tab): 3-4 credits

Choose FW 300 / FW 301 if taking FW 401

**Total Credits:** 15-16

## Senior

### Semester 8

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW 471</td>
<td>Wildlife Data Collection and Analysis</td>
<td></td>
<td>X</td>
<td>4C</td>
<td>3-4</td>
</tr>
<tr>
<td>FW 401</td>
<td>Fishery Science</td>
<td></td>
<td></td>
<td>4C</td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

- FW 455 Principles of Conservation Biology
- FW 472 Issues in Animal Conservation and Management

Aquatic Biology Elective (See Department List on Concentration Requirements tab): 3-4 credits

Human Dimensions Elective (See Department List on Concentration Requirements tab): 3 credits

FW 370, BSPM 302 / BSPM 303A or BSPM 445 or BZ 212 must be completed by the end of Semester 8.

**Total Credits:** 12-13

### Semester 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Human Dimensions Elective (See Department List on Concentration Requirements tab)</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Wildlife Elective (See Department List on Concentration Requirements tab)</td>
<td>X</td>
<td></td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Ecosystem Elective (See Department List on Concentration Requirements tab)</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Upper Division Technical Elective (See Department List on Concentration Requirements tab)</td>
<td>X</td>
<td></td>
<td></td>
<td>3-4</td>
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<td></td>
<td>Elective</td>
<td>X</td>
<td></td>
<td></td>
<td>1-2</td>
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</table>

The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

**Total Credits:** 10-14

### Program Total Credits:

120-121
Major in Fish, Wildlife, and Conservation Biology, Fisheries and Aquatic Sciences Concentration

Fisheries and Aquatic Sciences allow students to focus on a strong background in basic fishery ecology, management, and conservation, which includes an understanding of the linkages between land and water.

Requirements

Effective Fall 2015

A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting these requirements. Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 160 hours of paid or non-paid employment related to fishery and aquatic biology.

Freshman

Select one group from the following:  

<table>
<thead>
<tr>
<th>Group A:</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
</tr>
</tbody>
</table>

Group B:

| LIFE 102  | Attributes of Living Systems (GT-SC1) | 3A |
| LIFE 103  | Biology of Organisms-Animals and Plants |
| CO 150   | College Composition (GT-CO2) | 1A |

Select one group of chemistry and physics courses from the following:  

<table>
<thead>
<tr>
<th>Group A:</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
<td>3A</td>
</tr>
</tbody>
</table>

Group B:

| CHEM 111 | General Chemistry I (GT-SC2) | 3A |
| CHEM 112 | General Chemistry Lab I (GT-SC1) | 3A |
| CHEM 113 | General Chemistry II |
| CHEM 114 | General Chemistry Lab II |
| PH 110   | Descriptive Physics (GT-SC2) | 3A |
| PH 111   | Descriptive Physics Laboratory (GT-SC1) | 3A |
| FW 104   | Wildlife Ecology and Conservation (GT-SC2) | 3A |

Arts and Humanities  

<table>
<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>3</td>
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</table>

Total Credits  

<table>
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<tr>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>30-32</td>
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Sophomore

Select one from the following:  

<table>
<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4</td>
<td></td>
</tr>
</tbody>
</table>

<p>| BZ 220 | Introduction to Evolution |
| BZ 346  | Population and Evolutionary Genetics |
| BZ 350  | Molecular and General Genetics |
| SOCR 330 | Principles of Genetics |
| CHEM 245 | Fundamentals of Organic Chemistry |
| CHEM 246 | Fundamentals of Organic Chemistry Laboratory |
| FW 204  | Introduction to Fishery Biology |</p>
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW 260</td>
<td>Principles of Wildlife Management</td>
<td>3</td>
</tr>
<tr>
<td>HONR 499</td>
<td>Senior Honors Thesis</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>1B,1B</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B,1B</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
<td>3</td>
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**Social and Behavioral Sciences**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>3C</td>
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</tbody>
</table>

**Total Credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
<td>5</td>
</tr>
</tbody>
</table>

**Junior**

Select one group from the following:

**Group A:**
- BSPM 302 Applied and General Entomology
- BSPM 303A Entomology Laboratory: General

**Group B:**
- BSPM 445 Aquatic Insects

**Group C:**
- BZ 212 Animal Biology-Invertebrates

Select one course from the following:

- BZ 214 Animal Biology-Vertebrates
- BZ 329 Herpetology
- BZ 330 Mammalogy
- BZ 335 Ornithology

Select one Plant Biology course from the following:

- BZ 223 Plant Identification
- BZ 321 Aquatic Vascular Plants
- BZ 325 Plant Systematics
- BZ 332 Introductory Phycology
- BZ 450 Plant Ecology
- F 310/RS 310 Forest and Rangeland Ecogeography
- F 311 Forest Ecology
- NR 326 Forest Vegetation Management

Select one course from the following:

- CO 300 Writing Arguments (GT-CO3)
- CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3)
- CO 301B Writing in the Disciplines: Sciences (GT-CO3)
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)
- CO 301D Writing in the Disciplines: Education (GT-CO3)
- JTC 300 Professional and Technical Communication (GT-CO3)
- FW 300 Biology and Diversity of Fishes
- FW 301 Ichthyology Laboratory
- FW 370 Design of Fish and Wildlife Projects

Select four credits from the following:

- GEOL 120 Exploring Earth: Physical Geology (GT-SC2)
- GEOL 121 Introductory Geology Laboratory (GT-SC1)
- GEOL 122 The Blue Planet: Geology of Our Environment (GT-SC2)
Major in Fish, Wildlife, and Conservation Biology, Fisheries and Aquatic Sciences Concentration

GEOL 124  Geology of Natural Resources (GT-SC2)  3A
GEOL 150  Physical Geology for Scientists and Engineers
GR 304/WR 304  Sustainable Watersheds  3A
NR 319  Geospatial Applications in Natural Resources
NR 322  Introduction to Geographic Information Systems
SOCR 240  Introductory Soil Science
NR 320  Natural Resources History and Policy  3D  3

Global and Cultural Awareness  3E  3

Total Credits  28-31

Senior

Select one group not taken elsewhere from the following:  3-4
Group A:
BZ 471  Stream Biology and Ecology
BZ 472  Stream Biology and Ecology Laboratory
Group B:
BZ 474  Limnology
Group C:
NR 370  Coastal Environmental Ecology

Select one Ecosystem course not taken elsewhere from the following:  3
F 310/RS 310  Forest and Rangeland Ecogeography
F 311  Forest Ecology
F 324  Fire Effects and Adaptations
F 326  Wildland Fire Behavior and Management
FW 477  Wildlife Habitat Use and Management
GR 304/WR 304  Sustainable Watersheds  3A
NR 300  Biological Diversity
NR 326  Forest Vegetation Management
NR 370  Coastal Environmental Ecology
NR 440  Applications in Conservation Planning
NRRT 439  Open Space and Natural Area Management
RS 478  Ecological Restoration
WR 416  Land Use Hydrology
WR 418  Land Use and Water Quality

Select two from the following:  6-7
FW 400  Conservation of Fish in Aquatic Ecosystems
FW 402  Fish Culture
FW 405  Fish Physiology
FW 401  Fishery Science  4C  3

Select one Human Dimensions course not taken elsewhere from the following:  3
HIST 355  American Environmental History
NR 400  Public Relations in Natural Resources
NRRT 330  Social Aspects of Natural Resource Management
NRRT 400  Environmental Governance
NRRT 440  Applications in Environmental Communication
PHIL 320  Ethics of Sustainability
PHIL 345  Environmental Ethics
POL 361  U.S. Environmental Politics and Policy
SOC 320  Population-Natural Resources and Environment
SOC 322  Introduction to Environmental Justice
SOC 460  Society and Environment
SOC 461  Water, Society, and Environment
Select 0 to 5 credits of Fisheries and Aquatic Sciences coursework not taken elsewhere from the following:  

- BZ 300 Animal Behavior  
- BZ 310 Cell Biology  
- BZ 401 Comparative Animal Physiology  
- BZ 415 Marine Biology  
- CIVE 413 Environmental River Mechanics  
- FW 375 Field Wildlife Studies  
- FW 455 Principles of Conservation Biology  
- FW 465 Managing Human-Wildlife Conflicts  
- FW 467 Wildlife Disease Ecology  
- FW 469 Conservation and Management of Large Mammals  
- FW 471 Wildlife Data Collection and Analysis  
- FW 472 Issues in Animal Conservation and Management  
- FW 475 Conservation Decision Making  
- FW 477 Wildlife Habitat Use and Management  
- FW 544 Ecotoxicology  
- FW 573 Travel Abroad-Wildlife Ecology/Conservation  
- MIP 300 General Microbiology  
- NR 300 Biological Diversity  

Arts and Humanities  

<table>
<thead>
<tr>
<th>Credits</th>
<th>3B</th>
<th>3</th>
<th>22-28</th>
<th>120-121</th>
</tr>
</thead>
</table>

**Major Completion Map**

**Distinctive Requirements for Degree Program**: The curriculum for the Fish, Wildlife and Conservation Biology major – Fisheries and Aquatic Sciences concentration assumes students enter college prepared to take calculus. Students who have not met the prerequisites for calculus, will be required to successfully complete the prerequisites in their first year. A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting degree requirements. NR 220 is a summer course in which students reside at CSU's Mountain Campus. Students must choose ONE of two CHEM + PH paths: (Path A) CHEM 107/108 and PH 121/122 OR (Path B) CHEM 111, CHEM 112, CHEM 113, CHEM 114 and PH 110/111. Students must also choose ONE biology group A) BZ 110/BZ 111/BZ 120 or B) LIFE 102/LIFE 103. Students choosing the Fisheries and Aquatic Sciences concentration are also required to complete at least 160 hours of paid or non-paid employment related to fishery and aquatic biology.

**Freshman**

**Semester 1**  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select one group from the following:  

**Group A**:  

- BZ 110 Principles of Animal Biology (GT-SC2)  
- BZ 111 Animal Biology Laboratory (GT-SC1)  

**Group B**:  

1. Students taking this biology selection should choose a botany-related course in the department elective options to meet botany/plant course requirements for certain federal positions related to wildlife, fisheries, and/or conservation biology.  
2. Students will need to obtain a registration override from the appropriate department to take this course.  
3. Students in the Honors Track 1 program must take HONR 499.  
4. Students selecting WR 304 only need select three credits. Students selecting one of the geosciences lecture courses (GEOL 120, GEOL 122, GEOL 124) also need to take GEOL 121.  
5. Select enough Fisheries and Aquatic Sciences elective credits to bring the program total to 120-121, of which at least 42 must be upper-division (300- to 400-level).  
6. Restricted to FW subject code, department travel abroad courses, taught by FWCB faculty. No transfer or substitute courses will be accepted.
Major in Fish, Wildlife, and Conservation Biology, Fisheries and Aquatic Sciences Concentration

LIFE 102  Attributes of Living Systems (GT-SC1)  3A
Select one path from the following:  
Path A:  
PH 121  General Physics I (GT-SC1)  3A
Path B:  
CHEM 111  General Chemistry I (GT-SC2)  3A
CHEM 112  General Chemistry Lab I (GT-SC1)  3A
FW 104  Wildlife Ecology and Conservation (GT-SC2)  3A
MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1.

Total Credits  15

**Semester 2**

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td></td>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td>X</td>
<td>4</td>
<td></td>
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<tr>
<td></td>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
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<tr>
<td></td>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td></td>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>Path A:</td>
<td></td>
<td></td>
<td></td>
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<td>CO 150, AUCC 1B (MATH), and MATH 125 must be completed by the end of Semester 2.</td>
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Total Credits  15-17

**Sophomore**

**Semester 3**

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<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
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<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
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<td>Introduction to Fishery Biology</td>
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<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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Total Credits  15-16

**Semester 4**

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<td>Principles of Wildlife Management</td>
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<td>STAT 307</td>
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Total Credits  15-16
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**Junior**

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<td>GEOL 122 The Blue Planet: Geology of Our Environment (GT-SC2)</td>
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<td>GR 304/ WR 304 Sustainable Watersheds</td>
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<td>NR 319 Geospatial Applications in Natural Resources</td>
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<td>NR 322 Introduction to Geographic Information Systems</td>
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<td>BSPM 302 Applied and General Entomology</td>
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<td>BSPM 303A Entomology Laboratory: General</td>
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<td>Group B:</td>
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<td>BSPM 445 Aquatic Insects</td>
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<td>Group C:</td>
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<td>BZ 212 Animal Biology-Invertebrates</td>
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<td>Plant Biology Elective (See Department List on Concentration Requirements tab)</td>
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<td>STAT 301 or STAT 307, FW 260, and LIFE 320 must be completed by the end of Semester 6</td>
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**Semester 7**

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<td>FW 300 Biology and Diversity of Fishes</td>
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<td>FW 301 Ichthyology Laboratory</td>
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<td>FW 370 Design of Fish and Wildlife Projects</td>
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<td>NR 320 Natural Resources History and Policy</td>
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<td>Select one course from the following:</td>
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<td>BZ 214 Animal Biology-Vertebrates</td>
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<td>BZ 329 Herpetology</td>
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<td>BZ 330 Mammalogy</td>
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<td>BZ 335 Ornithology</td>
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Senior
Semester 8
FW 401 Fishery Science

Select one group from the following:

Group A:
BZ 471 Stream Biology and Ecology
BZ 472 Stream Biology and Ecology Laboratory

Group B:
BZ 474 Limnology

Group C:
NR 370 Coastal Environmental Ecology

Select one course from the following:

FW 400 Conservation of Fish in Aquatic Ecosystems
FW 402 Fish Culture
FW 405 Fish Physiology

Human Dimensions Elective (See Department List on Concentration Requirements tab)

BSPM 302 /BSPM 303A, or BSPM 445, or BZ 212 must be completed by the end of Semester 8.

Total Credits

Semester 9
Select one course from the following:

FW 402 Fish Culture
FW 405 Fish Physiology

Arts and Humanities

Ecosystem Elective (See Department List on Concentration Requirements tab)

Fisheries and Aquatic Sciences Elective (See Department List on Concentration Requirements tab)

The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

Total Credits

Program Total Credits:

Major in Fish, Wildlife, and Conservation Biology, Wildlife Biology Concentration

Wildlife Biology focuses primarily on terrestrial vertebrates and their habitats, and builds a strong foundation in basic wildlife ecology, management, and conservation.

Effective Fall 2015

A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife and conservation biology, and natural resource courses used to meet graduation requirements for the Fish, Wildlife, and Conservation Biology major. The minimum applies to courses taken as substitutions for meeting these requirements.

Freshman

Select one group of courses from the following:

Group A:
BZ 110 Principles of Animal Biology (GT-SC2)
BZ 111  Animal Biology Laboratory (GT-SC1)  3A
BZ 120  Principles of Plant Biology (GT-SC1)  3A
Group B:
LIFE 102\(^1\)  Attributes of Living Systems (GT-SC1)  3A
LIFE 103\(^1\)  Biology of Organisms-Animals and Plants
CO 150  College Composition (GT-CO2)  1A  3

Select one set of chemistry and physics courses from the following:  13-15
Group A:
CHEM 107  Fundamentals of Chemistry (GT-SC2)  3A
CHEM 108  Fundamentals of Chemistry Laboratory (GT-SC1)  3A
PH 121  General Physics I (GT-SC1)  3A
PH 122  General Physics II (GT-SC1)  3A
Group B:
CHEM 111  General Chemistry I (GT-SC2)  3A
CHEM 112  General Chemistry Lab I (GT-SC1)  3A
CHEM 113  General Chemistry II
CHEM 114  General Chemistry Lab II
PH 110  Descriptive Physics (GT-SC2)  3A
PH 111  Descriptive Physics Laboratory (GT-SC1)  3A
FW 104  Wildlife Ecology and Conservation (GT-SC2)  3A  3
Arts and Humanities  3B  3

Total Credits  30-32

Sophomore

BZ 223  Plant Identification  3
CHEM 245  Fundamentals of Organic Chemistry  4
CHEM 246  Fundamentals of Organic Chemistry Laboratory  1
FW 260  Principles of Wildlife Management  3
Select one from the following:  3
HONR 499\(^2\)  Senior Honors Thesis
SPCM 200\(^2\)  Public Speaking
LIFE 320  Ecology  3
MATH 155 or 160  Calculus for Biological Scientists I (GT-MA1)  1B  4
MATH 156 or 161  Calculus for Physical Scientists I (GT-MA1)
STAT 301 or 307  Introduction to Statistical Methods  3
STAT 302 or 308  Introduction to Biostatistics
Arts and Humanities  3B  3
Social and Behavioral Sciences  3C  3

Total Credits  30

Summer

NR 220  Natural Resource Ecology and Measurements  5

Total Credits  5

Junior

Select one group from the following:  4
Group A:
BSPM 302  Applied and General Entomology
BSPM 303A  Entomology Laboratory: General
Group B:
BSPM 445  Aquatic Insects
Group C:
BZ 212  Animal Biology-Invertebrates
Select one course or course pair not taken elsewhere from the following: 3-4

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<td>BZ 214</td>
<td>Animal Biology - Vertebrates</td>
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<td>BZ 329</td>
<td>Herpetology</td>
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<td>BZ 330</td>
<td>Mammalogy</td>
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<td>BZ 335</td>
<td>Ornithology</td>
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<tr>
<td>FW 300 &amp; FW 301</td>
<td>Biology and Diversity of Fishes</td>
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Select one course from the following: 3-4

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<td>BZ 220</td>
<td>Introduction to Evolution</td>
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<td>BZ 346^4</td>
<td>Population and Evolutionary Genetics</td>
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<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
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<td>BZ 330 or 335</td>
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<td>Introduction to Geographic Information Systems</td>
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<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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Global and Cultural Awareness 3E 3

Total Credits 29-31

Senior

Select one Biology/Botany course not taken elsewhere from the following: 3-4

### Biology Options

- ANEQ 320^4 Principles of Animal Nutrition
- BZ 220 Introduction to Evolution
- BZ 300 Animal Behavior
- BZ 310 Cell Biology
- BZ 346 Population and Evolutionary Genetics
- BZ 401 Comparative Animal Physiology
- BZ 415^4 Marine Biology
- BZ 471 Stream Biology and Ecology
- BZ 474 Limnology
- FW 400 Conservation of Fish in Aquatic Ecosystems
- MIP 300 General Microbiology
- MIP 315 Human and Animal Disease
- NR 367 Concepts in Vertebrate Nutrition
- NR 370 Coastal Environmental Ecology

### Botany Options

- BZ 302 Poisonous Plants
- BZ 321 Aquatic Vascular Plants
- BZ 325 Plant Systematics
- BZ 331 Developmental Plant Anatomy
- BZ 332 Introductory Phycology
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<td>BZ 440</td>
<td>Plant Physiology</td>
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<td>BZ 450</td>
<td>Plant Ecology</td>
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<tr>
<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
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<td>F 311</td>
<td>Forest Ecology</td>
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Select one Ecosystem Course not taken elsewhere from the following: 3

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<td>F 311</td>
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<td>F 324</td>
<td>Fire Effects and Adaptations</td>
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<td>F 326</td>
<td>Wildland Fire Behavior and Management</td>
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<td>FW 477</td>
<td>Wildlife Habitat Use and Management</td>
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GR 304/WR 304 Sustainable Watersheds 3A

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<td>Forest Vegetation Management</td>
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<td>NR 370</td>
<td>Coastal Environmental Ecology</td>
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<td>NR 440</td>
<td>Applications in Conservation Planning</td>
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<td>Open Space and Natural Area Management</td>
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<td>RS 479</td>
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<td>WR 416</td>
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<td>WR 418</td>
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Select one Wildlife course not taken elsewhere from the following: 3-4

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<td>FW 455</td>
<td>Principles of Conservation Biology</td>
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<td>FW 465</td>
<td>Managing Human-Wildlife Conflicts</td>
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<td>FW 467</td>
<td>Wildlife Disease Ecology</td>
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<td>FW 469</td>
<td>Conservation and Management of Large Mammals</td>
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<td>FW 471</td>
<td>Wildlife Data Collection and Analysis</td>
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<td>FW 472</td>
<td>Issues in Animal Conservation and Management</td>
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<td>Conservation Decision Making</td>
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<td>FW 477</td>
<td>Wildlife Habitat Use and Management</td>
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<td>FW 544</td>
<td>Ecotoxicology</td>
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<td>FW 573</td>
<td>Travel Abroad-Wildlife Ecology/Conservation</td>
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<td>Travel Abroad Upper-Division</td>
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Select one Human Dimensions course not taken elsewhere from the following: 3

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<td>NR 400</td>
<td>Public Relations in Natural Resources</td>
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<td>NRRT 330</td>
<td>Social Aspects of Natural Resource Management</td>
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<td>Environmental Governance</td>
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<td>NRRT 440</td>
<td>Applications in Environmental Communication</td>
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<td>PHIL 320</td>
<td>Ethics of Sustainability</td>
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<td>PHIL 345</td>
<td>Environmental Ethics</td>
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<tr>
<td>POLS 361</td>
<td>U.S. Environmental Politics and Policy</td>
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<tr>
<td>SOC 320</td>
<td>Population-Natural Resources and Environment</td>
</tr>
<tr>
<td>SOC 322</td>
<td>Introduction to Environmental Justice</td>
</tr>
<tr>
<td>SOC 460</td>
<td>Society and Environment</td>
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<td>SOC 461</td>
<td>Water, Society, and Environment</td>
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</table>

Technical Electives 6

Elective 7

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</table>

Total Credits 22-27

Program Total Credits: 120-121
Students taking this biology selection should choose a botany-related course in the department elective options to meet botany/plant course requirements for certain federal positions related to wildlife, fisheries, and/or conservation biology.

Students in the Honors Track 1 program must take HONR 499.

FW 300 and FW 301 count together as one selection in this choice.

Students will need to obtain a registration override from the appropriate department to take this course.

Restricted to FW subject code, department travel abroad courses, taught by FWCB faculty. No transfer or substitute courses will be accepted.

Technical Electives are courses intended to expand a student's depth and breadth in wildlife biology and include any 300- or 400-level regular course with a BC, BMS, BSPM, CHEM, ESS, F, FW, GES, MATH, MIP, NR, NRRT, PH, RS, SOCR, STAT, or WR subject code (excluding courses ending in -80 to -99); SOCR 240; other course with prior approval by department and advisor. Courses may not double-count as Technical Electives and for other requirements in the major.

Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:** The curriculum for the Fish, Wildlife and Conservation Biology major — Wildlife Biology concentration assumes students enter college prepared to take calculus. Students who have not met the prerequisites for calculus, will be required to successfully complete the prerequisites in their first year. A minimum grade of C (2.000) is required in all biological, mathematical/statistical, physical science, fish, wildlife, and conservation biology, and natural resource courses used to meet graduation requirements for the fish, wildlife, and conservation biology major. The minimum applies to courses taken as substitutions for meeting degree requirements. NR 220 is a summer course in which students reside at CSU’s Mountain Campus. Students must choose ONE of two CHEM + PH paths: (Path A) CHEM 107/CHEM 108 and PH 121/PH 122 or (Path B) CHEM 111, CHEM 112, CHEM 113, CHEM 114 and PH 110/PH 111. Students must also choose ONE biology group A) BZ 110/BZ 111/BZ 120 or B) LIFE 102/LIFE 103.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<tbody>
<tr>
<td>CO 150</td>
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<td>Group A:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BZ 110 Principles of Animal Biology (GT-SC2)</td>
<td></td>
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<td>3A</td>
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<td>BZ 111 Animal Biology Laboratory (GT-SC1)</td>
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<td>3A</td>
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<td>Group B:</td>
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<tr>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
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<td>Path A:</td>
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<td>PH 121 General Physics I (GT-SC1)</td>
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<td>Path B:</td>
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<td>CHEM 111 General Chemistry I (GT-SC2)</td>
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<td>CHEM 112 General Chemistry Lab I (GT-SC1)</td>
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<td>FW 104 Wildlife Ecology and Conservation (GT-SC2)</td>
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<tr>
<td>MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1.</td>
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<td>BZ 120 Principles of Plant Biology (GT-SC1)</td>
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<td>LIFE 103 Biology of Organisms-Animals and Plants</td>
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<td>Path A:</td>
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<td>CHEM 107 Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<tr>
<td>PH 122 General Physics II (GT-SC1)</td>
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<td>Path B:</td>
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<tr>
<td>CHEM 113 General Chemistry II</td>
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<td>CHEM 114 General Chemistry Lab II</td>
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</table>
PH 110  Descriptive Physics (GT-SC2)  3A
PH 111  Descriptive Physics Laboratory (GT-SC1)  3A
Arts and Humanities  3B  3
CO 150, AUCC 1B (MATH) and MATH 125 must be completed by the end of Semester 2.

Total Credits  15-17

**Sophomore**

**Semester 3**

<table>
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<th>Course</th>
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<td>BZ 223</td>
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<td>CHEM 245</td>
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<td>CHEM 246</td>
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<td>FW 260</td>
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<td>MATH 155</td>
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<td>MATH 160</td>
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Total Credits  15

**Semester 4**

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<tr>
<td>LIFE 320</td>
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<tr>
<td>HONR 499</td>
<td>3</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>3</td>
</tr>
<tr>
<td>STAT 301</td>
<td>3</td>
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<tr>
<td>STAT 307</td>
<td>3</td>
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<tr>
<td>Arts and Humanities  3B  3</td>
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<tr>
<td>Social and Behavioral Sciences  3C  3</td>
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<td>FW 260</td>
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Total Credits  15

**Semester 5**

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Total Credits  5

**Junior**

**Semester 6**

<table>
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<td>CO 300</td>
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<td>CO 301A</td>
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<tr>
<td>CO 301B</td>
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<tr>
<td>CO 301C</td>
<td>2</td>
</tr>
<tr>
<td>CO 301D</td>
<td>2</td>
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<tr>
<td>JTC 300</td>
<td>2</td>
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</table>

Select one course from the following:

Group A:
- BSPM 302  Applied and General Entomology
- BSPM 303A  Entomology Laboratory: General

Group B:
- BSPM 445  Aquatic Insects

Group C:
- BZ 212  Animal Biology-Invertebrates

Select one course from the following:  3
Major in Fish, Wildlife, and Conservation Biology, Wildlife Biology Concentration

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>FW 370</td>
<td>Design of Fish and Wildlife Projects</td>
<td>X</td>
<td>4A,4B</td>
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<td>Select one course from the following:</td>
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<td></td>
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<td>BZ 335</td>
<td>Ornithology</td>
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<td>3</td>
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<tr>
<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<td>3D</td>
<td>3-4</td>
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<td>Select one group from the following:</td>
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<td>Group A:</td>
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<tr>
<td>BZ 214</td>
<td>Animal Biology-Vertebrates</td>
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<td>Group B:</td>
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<tr>
<td>BZ 329</td>
<td>Herpetology</td>
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<td>Group C:</td>
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<tr>
<td>BZ 330</td>
<td>Mammalogy</td>
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<td>Group D:</td>
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<tr>
<td>BZ 335</td>
<td>Ornithology</td>
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<td>Group E:</td>
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<tr>
<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
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<tr>
<td>FW 301</td>
<td>Ichthyology Laboratory</td>
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<td>Select one course from the following:</td>
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<tr>
<td>BZ 220</td>
<td>Introduction to Evolution</td>
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<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
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<td>BZ 350</td>
<td>Molecular and General Genetics</td>
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<td>SOCR 330</td>
<td>Principles of Genetics</td>
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Global and Cultural Awareness 3E 3

Total Credits 15-17

Senior

<table>
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<tr>
<th>Semester 8</th>
<th>Critical</th>
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<tbody>
<tr>
<td>FW 471</td>
<td>Wildlife Data Collection and Analysis</td>
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<td>4C</td>
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<td>Wildlife Elective (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>Ecosystem Management Elective (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>Upper Division Technical Elective (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>BSPM 302 / BSMP 303A, or BSPM 445, or BZ 212, and FW 370 must be completed by the end of Semester 8.</td>
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Total Credits 13-14

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<td>Human Dimensions Elective (See Department List on Concentration Requirements tab)</td>
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<td>Upper Division Technical Elective (See Department List on Concentration Requirements tab)</td>
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<tr>
<td>Biology or Botany Elective (See Department List on Concentration Requirements tab)</td>
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<td>Elective</td>
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<tr>
<td>The benchmark courses for the 9th semester are the remaining courses in the entire program of study.</td>
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Total Credits 9-13

Program Total Credits: 120-121

BZ 330  Mammalogy
NR 320  Natural Resources History and Policy
STAT 301 or STAT 307 and LIFE 320 must be completed by the end of Semester 6.
Minor in Fishery Biology

Students majoring in watershed science, forestry, rangeland ecology, zoology, and others may find that a minor in fishery biology will increase employment opportunities. The requirements for this minor provide a solid base for aquatic work.

Requirements

Effective Spring 2011

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<thead>
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<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>Lower Division</td>
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<tr>
<td>LAND 220/</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
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<tr>
<td>or LIFE 220</td>
<td>Ecology</td>
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<tr>
<td>or LIFE 320</td>
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<tr>
<td>Group A:</td>
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<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
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<td>Lower or Upper Division</td>
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<td>Select one course from the following:</td>
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<td>FW 204</td>
<td>Introduction to Fishery Biology</td>
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<td>FW 260</td>
<td>Principles of Wildlife Management</td>
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<td>FW 370</td>
<td>Design of Fish and Wildlife Projects</td>
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<td>Upper Division</td>
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<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
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<td>FW 301</td>
<td>Ichthyology Laboratory</td>
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<td>Select two courses from the following:</td>
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<tr>
<td>FW 400</td>
<td>Conservation of Fish in Aquatic Ecosystems</td>
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<td>FW 401</td>
<td>Fishery Science</td>
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<td>FW 402</td>
<td>Fish Culture</td>
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<td>Advisor-approved aquatic course</td>
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Master of Fish, Wildlife, and Conservation Biology, Plan C (M.F.W.C.B.)

Requirements

Effective Fall 2016

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<th>Code</th>
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<tr>
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<tr>
<td>FW 551</td>
<td>Design of Fish and Wildlife Studies</td>
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</table>

Department of Forest and Rangeland Stewardship

Office in Forestry Building, Room 123
(970) 491-6911
warnercnr.colostate.edu/frs-home (http://warnercnr.colostate.edu/frws-home)

Dr. Linda Nagel, Department Head
Erin Heim, Undergraduate Program Coordinator
Sonya Le Febre, PhD, Graduate Program Coordinator

Undergraduate Majors

- Major in Fire and Emergency Services Administration
- Major in Forestry
  - Forest Biology Concentration
• Forest Fire Science Concentration
• Forest Management Concentration
• Forestry-Business Concentration

• Major in Natural Resources Management
• Major in Rangeland Ecology
  • Conservation and Management Concentration
  • Range and Forest Management Concentration
  • Restoration Ecology Concentration

### Minors

• Minor in Ecological Restoration
• Minor in Forestry
• Minor in Range Ecology
• Minor in Spatial Information Management

### Graduate Programs in Forest and Rangeland Stewardship

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Forest Sciences and Rangeland Ecosystem Science, and to Master of Natural Resources Stewardship with specializations in Ecological Restoration, Forest Sciences, and Rangeland Ecosystems. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Forest and Rangeland Stewardship (http://warnercnr.colostate.edu/frs-graduate-study/graduate-program).

### Master Programs

• Master of Science in Forest Sciences, Plan A*
• Master of Science in Forest Sciences, Plan B*
• Master of Natural Resources Stewardship, Plan C, Ecological Restoration Specialization
• Master of Natural Resources Stewardship, Plan C, Forest Sciences Specialization
• Master of Natural Resources Stewardship Plan C, Rangeland Ecosystems Specialization
• Master of Natural Resources Stewardship Plan C, Sustainable Military Lands Management Specialization
• Master of Science in Rangeland Ecosystem Science, Plan A*
• Master of Science in Rangeland Ecosystem Science, Plan B*

### Ph.D.

• Ph.D. in Forest Sciences*
• Ph.D in Rangeland Ecosystem Science*

* Please see department for program of study.

### Courses

Subjects in this department include: Fire and Emergency Service Administration (FESA), Forest and Rangeland Stewardship (F), and Rangeland Ecosystem Science (RS).

---

### Fire and Emergency Service Administration (FESA)

**FESA 310 Fire Service Leadership**

*Credits: 3 (0-0-3)*

**Course Description:** Theory, practice, and application of ethical leadership in public safety; developing personal ethics and leadership skills and abilities.

*Prerequisite: None.*

*Registration Information: Offered as an online course only.*

*Term Offered: Fall.*

*Grade Mode: Traditional.*

*Special Course Fee: No.*

**FESA 330 Industrial Processes and Fire Protection**

*Credits: 3 (0-0-3)*

**Course Description:** Industrial processes and fire protection managed by fire and safety personnel.

*Prerequisite: None.*

*Registration Information: Offered as an online course only.*

*Term Offered: Summer (even years).*

*Grade Mode: Traditional.*

*Special Course Fee: No.*

**FESA 331 Structure Influence on Tactics and Strategy**

*Credits: 3 (3-0-0)*

**Course Description:** How construction type, alterations, design and materials influence a building’s reaction to fire. Fireground influence on tactics and strategy.

*Prerequisite: None.*

*Registration Information: Offered as an online course only.*

*Terms Offered: Fall, Summer.*

*Grade Mode: Traditional.*

*Special Course Fee: No.*

**FESA 333 Proposals/Reports in Fire Service Management**

*Credits: 3 (0-0-3)*

**Course Description:** Process of preparing reports and developing a proposal supported by research. Introduction to research techniques, Internet and library use; conventions of documentation.

*Prerequisite: None.*

*Registration Information: Offered as an online course only.*

*Terms Offered: Fall, Spring.*

*Grade Mode: Traditional.*

*Special Course Fee: No.*

**FESA 334 Orientation to Experiential Learning**

*Credit: 1 (0-0-1)*

**Course Description:** Demonstration of knowledge, skill, and professional experience for the purpose of enhancing documentation and career development skills.

*Prerequisite: None.*

*Registration Information: Offered as an online course only.*

*Terms Offered: Fall, Spring.*

*Grade Mode: Traditional.*

*Special Course Fee: No.*

**FESA 335 Trends in Fire Science Technologies**

*Credits: 3 (0-0-3)*

**Course Description:** Analytical tools designed to evaluate, align, select, and implement emerging fire science technologies.

*Prerequisite: None.*

*Registration Information: Offered as an online course only.*

*Term Offered: Spring.*

*Grade Mode: Traditional.*

*Special Course Fee: No.*
FESA 336 Fire Emergency Services Administration Credits: 3 (0-0-3)
Course Description: Fire and emergency service administrative structures and processes. Examination of management and leadership models and applications.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 341 Fire Officer I-A Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level I, 4.1 to 4.4.
Prerequisite: None.
Registration Information: Enrollment in FESA program or written consent of instructor. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 431 Emergency Medical Services Management Credits: 3 (0-0-3)
Course Description: Emergency medical service models, design implementation, evaluation. Interactions with health care systems, public policy and public health systems.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 432 Fire and Emergency Services Budgeting Credits: 3 (0-0-3)
Course Description: Application of emergency service budgeting systems with emphasis on revenues, public financial controls, capital funding and performance measures.
Prerequisite: FESA 333 and FESA 336.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 433 Fire and Emergency: Human Resources Credits: 3 (0-0-3)
Course Description: Theory, practice, and models of human resources applied to emergency organizations; workforce development, HR functions, and labor relation.
Prerequisite: FESA 333 and FESA 336.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 434 Training Program Management Credits: 3 (0-0-3)
Course Description: Development of agency training and education programs. Utilization of training and education practices, resources, facilities and technologies.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 435 Volunteer/Combination Organization Management Credits: 3 (0-0-3)
Course Description: Development and management of fire and emergency service organizations with volunteer and combination resources.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 436 Fire Protection Through Model Building Codes Credits: 3 (0-0-3)
Course Description: Overview of the most current fire codes that are used across the United States. Discussion of fire inspection methodology and enforcement practices.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 337 Policy and Public Administration Credits: 3 (0-0-3)
Course Description: Political and legal foundations of fire and emergency services. Public administration concepts, decision making and policy development.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 338 Essentials of Emergency Management Credits: 3 (0-0-3)
Course Description: Emergency management theory; mitigation, planning, response, and recovery in large-scale incidents. Development/operation of emergency operation centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 339 Incident Command Systems Credits: 3 (0-0-3)
Course Description: Theory and application of incident command systems (ICS) to the command and coordination of major emergency operations.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 342 Fire Officer I-B Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level II, 4.5 to 4.7.
Prerequisite: FESA 341 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 343 Fire and Emergency: Human Resources Credits: 3 (0-0-3)
Course Description: Theory and application of incident command systems (ICS) to the command and coordination of major emergency operations.
Prerequisite: FESA 342 and FESA 338.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 344 Fire Protection Through Model Building Codes Credits: 3 (0-0-3)
Course Description: Overview of the most current fire codes that are used across the United States. Discussion of fire inspection methodology and enforcement practices.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 345 Volunteer/Combination Organization Management Credits: 3 (0-0-3)
Course Description: Development and management of fire and emergency service organizations with volunteer and combination resources.
Prerequisite: FESA 342 and FESA 343.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 346 Fire Protection Through Model Building Codes Credits: 3 (0-0-3)
Course Description: Overview of the most current fire codes that are used across the United States. Discussion of fire inspection methodology and enforcement practices.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
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<th>Course Code</th>
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<td>Fire and Emergency: Legal Considerations</td>
<td>3 (0-0-3)</td>
<td>FESA 432 and FESA 433.</td>
<td>Offered as an online course only.</td>
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<td>FESA 438</td>
<td>Prevention Program Management</td>
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<td>FESA 432 and FESA 433.</td>
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<td>FESA 441</td>
<td>Fire Officer II-A</td>
<td>3 (3-0-0)</td>
<td>FESA 441 with a minimum grade of C.</td>
<td>Offered as an online course only.</td>
<td>Fall</td>
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<tr>
<td>FESA 442</td>
<td>Fire Officer II-B</td>
<td>3 (3-0-0)</td>
<td>FESA 441 with a minimum grade of C.</td>
<td>Offered as an online course only.</td>
<td>Fall</td>
<td>Traditional</td>
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<td>FESA 467</td>
<td>Integrated Management Simulation</td>
<td>3 (0-0-3)</td>
<td>FESA 432 and FESA 433.</td>
<td>Offered as an online course only.</td>
<td>Fall</td>
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<td>No.</td>
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<td>FESA 492</td>
<td>Seminar</td>
<td>Var[1-3] (0-0-0)</td>
<td>None.</td>
<td>Offered as an online course only.</td>
<td>Fall, Spring</td>
<td>S/U Sat/Unsat Only</td>
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<td>FESA 495</td>
<td>Independent Study</td>
<td>Var[1-6] (0-0-0)</td>
<td>None.</td>
<td>Offered as an online course only.</td>
<td>Fall, Spring</td>
<td>S/U Sat/Unsat Only</td>
<td>No.</td>
</tr>
</tbody>
</table>

**Forest and Rangeland Stewardship (F)**

F 224 Wildland Fire Measurements Credit: 1 (0-2-0)
Course Description: Wildland fire control and use measurements: fuels, weather, topography, fire behavior, and fire ecology.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 230 Forestry Field Measurements Credits: 2 (0-4-0)
Course Description: Develop field skills using maps, compasses, and aerial photos; photo interpretation; tree and stand measurements; stand volume and value estimates.
Prerequisite: None.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 310 Forest and Rangeland Ecogeography Credits: 3 (2-2-0)
Also Offered As: RS 310.
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common in North America.
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.
Registration Information: Must have concurrent registration in F 312. Must register for lecture and laboratory. Credit not allowed for both F 310 and RS 310.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 311 Forest Ecology Credits: 3 (3-0-0)
Course Description: Relationships of ecological concepts to the dynamics of forest ecosystems.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 312 Dendrology Lab Credit: 1 (0-2-0)
Course Description: Identification of characteristic trees common to North American forests.
Prerequisite: F 310, may be taken concurrently.
Registration Information: Must have concurrent registration in F 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 321 Forest Biometry Credits: 3 (2-2-0)
Course Description: Measurement and estimation of timber in logs, trees, and stands. Sampling with varying probabilities.
Prerequisite: (NR 220 and F 230) and (STAT 201 or STAT 301) and (MATH 141 or MATH 155).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 322 Economics of the Forest Environment Credits: 3 (3-0-0)
Course Description: Economic principles and techniques applied to forested environments.
Prerequisite: AREC 202 or ECON 202 or ECON 240 or AREC 240.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 324 Fire Effects and Adaptations Credits: 3 (3-0-0)
Course Description: Introduction to fire ecology including fire history, ecosystem effects, and organism responses.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 325 Silviculture Credits: 3 (3-0-0)
Course Description: Principles of silviculture and their application to major forest types of United States.
Prerequisite: F 230 and F 311 and NR 220.
Registration Information: Credit not allowed for both F 325 and NR 326.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 326 Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Physical and managerial principles influencing fire, how fires shape our forests and approaches used to manage wildland fire.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

F 330 Timber Harvesting and the Environment Credits: 3 (2-2-0)
Course Description: Principles of timber harvesting and effects of logging on the environment.
Prerequisite: F 230 or F 321.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 331 Wood Products in Society Credits: 3 (2-2-0)
Course Description: Role of wood products in society; spectrum of wood products; some field trips.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 421 Forest Stand Management Credits: 4 (3-3-0)
Course Description: Forest management plan preparation: forest condition and health assessment; evaluation of silvicultural treatments; implementation and monitoring.
Prerequisite: F 230 and F 321 and F 322 and F 325.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 422 Quantitative Methods in Forest Management Credits: 3 (2-2-0)
Course Description: Design and analysis of optimization and nonoptimization models in forest managerial operations.
Prerequisite: F 321 and F 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 425 Advanced Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Advanced strategies, tools, and techniques for wildland fire management: prediction, prevention, suppression, and use for resource benefit.
Prerequisite: F 326 and NR 319.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 430 Forestry Field Practices Credits: 3 (1-4-0)
Course Description: Forestry field course, S212 saw certification, collect stand inventory data, develop and implant stand prescription, and harvest and process trees.
Prerequisite: F 330 and F 421.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 466 Urban and Community Forestry Credits: 3 (3-0-0)
Also Offered As: HORT 466.
Course Description: Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite: F 310 or RS 310 or HORT 221.
Registration Information: Credit not allowed for both F 466 and HORT 466.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 487 Professional Forestry Internship Credits: Var[3-12] (0-0-0)
Course Description: Professional-level field experience with forestry organization.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
F 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
F 510 Ecophysiology of Trees Credits: 3 (2-3-0)
Course Description: Environmental factors affecting physiology of woody plants; emphasis on water relations in trees and importance of water in physiological processes.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 520 Advanced Quantitative Methods in Forestry I Credits: 3 (3-0-0)
Course Description: Design and analysis of optimization models in forest management operations: linear, goal, and dynamic programming.
Prerequisite: F 322 and MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
F 521 Advanced Quantitative Methods in Forestry II Credits: 3 (2-2-0)
Course Description: Analysis of forest inventory information; dynamic and stochastic models oriented to decision making and research in forestry.
Prerequisite: F 520.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 522 Advanced Forest Economics Credits: 3 (3-0-0)
Course Description: Analysis of forestry issues: financial maturity, management intensity, federal policy, taxation, natural environments, and silviculture.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
F 524 Forest Fire Meteorology and Behavior Credits: 3 (2-2-0)
Course Description: effects of atmospheric processes on wild and prescribed fires; interrelationships of weather, fuels, and topography on forest and range fires.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
F 525 Silvicultural Practices Credits: 4 (3-0-1)
Course Description: Comprehensive coverage of silvicultural practices as applied in US forestry.
Prerequisite: F 311.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 530 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
F 540 Fuels, Vegetation, and Fire Management Credits: 3 (2-3-0)
Course Description: Develop, test and display the impact of alternative fuels and vegetation treatments on vegetation development, fuels and fire behavior.
Prerequisite: None.
Registration Information: Admission to the Continuing Education in Fuels Management program through the Office of Conference Services.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
F 541 Data Analysis/Interpretation-Fire Managers Credits: 3 (3-0-0)
Course Description: Knowledge and skills for complex analyses of fire information.
Prerequisite: None.
Registration Information: Employment as a wildfire manager. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
F 542 Wildland Fire Economics and Management Credits: 3 (3-0-0)
Course Description: Managerial economics and management techniques applied to wildland fire situations.
Prerequisite: None.
Registration Information: Employment as wildland fire manager.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 544 Decision Methods for Fire Managers Credits: 3 (3-0-0)
Course Description: Application of decision methods, including optimization techniques, finance and decision trees to initial attack and fuels management problems.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
F 593 Seminar-Fire Science Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
F 620 Fire Ecology Credits: 3 (2-2-0)
Course Description: Fire in forest and range ecosystems; principles and techniques for evaluating fire effects on vegetation, soils, watersheds, and wildlife.
Prerequisite: ECOL 505 or F 310 or F 311 or LIFE 320 or NR 565 or NR 578 or RS 300 or RS 310 or RS 452.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 625 Ecology of Forest Production Credits: 3 (3-0-0)
Also Offered As: ESS 625.
Course Description: Develops student expertise in understanding carbon and nutrient flows in forests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have completed one 300-level course in ECOL. Credit not allowed for both F 625 and ESS 625. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 693 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 721 Forest Policy Credits: 3 (3-0-0)
Course Description: Policies and institutions affecting management of forest lands in U.S.
Prerequisite: NR 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

F 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

F 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Rangeland Ecosystem Science (RS)
RS 300 Rangeland Conservation and Stewardship Credits: 3 (3-0-0)
Course Description: Conservation and management of rangeland-ecosystem values using sustainable practices.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 310 Rangeland and Forest Ecogeography Credits: 3 (2-2-0)
Also Offered As: F 310.
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common to North America.
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.
Registration Information: Must have concurrent registration in RS 312. Must register for lecture and laboratory. Credit not allowed for both RS 310 and F 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 312 Rangeland Plant Identification Lab Credit: 1 (0-2-0)
Course Description: Identification of characteristic grasses, forbs, and shrubs common to North American rangelands.
Prerequisite: RS 310, may be taken concurrently.
Registration Information: Must have concurrent registration in RS 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 329 Rangeland Assessment Credit: 1 (0-3-0)
Course Description: Five-day intensive field-based course on principles of rangeland ecosystem assessment.
Prerequisite: (F 310 or RS 310) and (RS 300 and SOCR 240).
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 331 Wildland Plants and Plant Communities Credits: 3 (2-2-0)
Course Description: Distribution of non-forested wildland plant communities and important plant species in the western United States.
Prerequisite: BZ 223 or NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
RS 351  Wildland Ecosystems in a Changing World  Credits: 3 (2-2-0)  
**Course Description:** Understanding and conserving non-forested wildland ecosystems, processes, and services under changing environmental conditions.  
**Prerequisite:** (LIFE 320 or LAND 220 or LIFE 220) and (SOCR 240).  
**Registration Information:** Must register for lecture and laboratory. Required field trips.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 400  Rangeland Improvements  Credits: 2 (2-0-0)  
**Course Description:** Improvement of rangelands through biological and cultural methods; management of improved rangelands.  
**Prerequisite:** RS 300 or SOCR 320.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 420  Grass Taxonomy  Credits: 3 (1-4-0)  
**Course Description:** Anatomy, morphology, and identification of grasses.  
**Prerequisite:** BZ 223.  
**Registration Information:** Must register for lecture and laboratory.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 432  Rangeland Measurements and Monitoring  Credits: 2 (1-3-0)  
**Course Description:** Vegetation sampling and field measurements emphasizing applications for monitoring and adaptive management.  
**Prerequisite:** (NR 220 and RS 300, may be taken concurrently) and (STAT 201 or STAT 301 or STAT 307).  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 452  Rangeland Herbivore Ecology and Management  Credits: 3 (3-0-0)  
**Course Description:** Ecology and management of large ungulate herbivores including consumer functions at organismal and ecosystem levels.  
**Prerequisite:** (RS 300 and (LAND 220 or LIFE 220 or LIFE 320)).  
**Registration Information:** Voluntary field trips.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 470  Rangeland Economics and Analysis  Credits: 2 (2-0-0)  
**Course Description:** Economics of rangeland resource use; analytical techniques for allocation of rangeland resources.  
**Prerequisite:** (AREC 202 or ECON 202) and (RS 300).  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 471  Rangeland Planning and Grazing Management  Credits: 2 (2-0-0)  
**Course Description:** Definition of grazing management, grazing systems. Synthesis of animal, plant responses to grazing management. Structure, function of rangeland planning.  
**Prerequisite:** RS 300 or SOCR 320.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 472  Rangeland Ecosystem Planning  Credits: 4 (1-6-0)  
**Course Description:** Range allotment, ranch, and restoration planning.  
**Prerequisite:** RS 471.  
**Registration Information:** Must register for lecture and laboratory. Required field trips.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 478  Ecological Restoration  Credits: 3 (3-0-0)  
**Course Description:** Analysis of environmental factors influencing restoration of disturbed lands and practices for successful restoration of disturbed ecosystems.  
**Prerequisite:** (BZ 450 or LAND 220 or LIFE 220 or LIFE 320) and (SOCR 240).  
**Registration Information:** Credit not allowed for both RS 478 and NR 678.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 495  Independent Study-Rangeland Ecosystems  Credits: Var[1-18] (0-0-0)  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

RS 496  Group Study-Rangeland Ecosystems  Credits: Var[1-18] (0-0-0)  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

RS 500  Advanced Rangeland Management  Credits: 3 (3-0-0)  
**Course Description:** Rangeland management concepts.  
**Prerequisite:** LAND 220 or LIFE 320 or NR 220 or LIFE 220.  
**Registration Information:** Sections may be offered: Online.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 501  Range Habitat Manipulation  Credits: 3 (3-0-0)  
**Course Description:** Improvement of range habitats and effects on ecosystem components.  
**Prerequisite:** RS 300 or SOCR 320.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

RS 520  Range Issues and Policy  Credits: 2 (2-0-0)  
**Course Description:** Explores and evaluates current issues and policies concerning range use.  
**Prerequisite:** RS 300 or SOCR 320.  
**Term Offered:** Fall (even years).  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.
RS 531  World Grassland Ecogeography  Credits: 3 (2-3-0)
Course Description: Distribution, climate, and structure of the world's major grasslands with emphasis on North America.
Prerequisite: BZ 223.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 532  Rangeland Ecosystem Sampling  Credits: 3 (1-3-1)
Course Description: Measurement, analysis techniques for rangeland vegetation. Applications to management emphasized.
Prerequisite: (STAT 301) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Registration Information: Credit not allowed for both RS 532 and RS 432. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 552  Range Animal Production and Management  Credits: 4 (3-0-1)
Course Description: Biological and ecological basis for production of meat from rangelands.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RS 565  Riparian Ecology and Management  Credits: 3 (2-2-0)
Course Description: Analysis of interactions among biotic and abiotic processes as relates to the ecology and management of riparian systems, emphasizing case studies.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 630  Ecology of Grasslands and Shrublands  Credits: 3 (3-0-0)
Course Description: Distributions and climatic controls on grassland and shrubland plant communities.
Prerequisite: NR 565.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 640  Vegetation-Environment Analysis  Credits: 3 (3-0-0)
Course Description: Multivariate analyses and ecological interpretations of vegetation communities.
Prerequisite: STAT 301.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

RS 651  Primary Production and Decomposition  Credits: 4 (3-2-0)
Course Description: Energy transformations within primary producer compartment; dissipation of ecosystem biomass by decomposers, mineralization.
Prerequisite: BZ 440 and SOCR 100 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 693  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 695  Independent Study-Rangeland Ecosystem  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 696  Group Study-Rangeland Ecosystem  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 698  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 793  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Fire and Emergency Services Administration

The fire and emergency services have a long and proud history of serving their communities with a wide variety of fire protection, prevention, emergency medical, and public education services. The fire and emergency services administrators of the future need advanced administration, management, and leadership skills to address the ever-evolving nature of emergency services. The major prepares students for managerial and officer positions in emergency and fire service organizations.

The major is a degree completion program for students to gain advanced knowledge of emergency service related subjects. The coursework builds upon technical skills and experiences earned in First Responder associate degree programs and on-the-job training. Students will explore key administrative and management areas such as emergency operations, public service budgeting, human resources, prevention, and incident command. The major is focused on the administration and management of First Responder organizations.

All fire and emergency services administration courses are upper-division and offered online via distance education only through the Division of Continuing Education/CSU Online (http://www.online.colostate.edu).

Learning Outcomes

Students will demonstrate their ability to:

- Effectively integrate academic knowledge into fire and emergency services administrative and managerial roles within current and future employment situations.
- Collaborate with peers to solve fire and emergency services organizational problems. Effective collaboration includes the ability to organize and synthesize ideas, develop a persuasive argument, interact with individuals and groups, and use applicable presentation aids.
- Apply their knowledge, skills, and competencies in the fire and emergency services field to fire and emergency services organizations. Examples include knowledge of proposal and report writing, trends in emergency management and incident command systems, and comprehension of public service administration practices.
- Interact with professional First Responders nationally and internationally.

Potential Occupations

Students in the Fire and Emergency Services Administration major should have work experience in the fire and emergency services field. Typical students are employed as career or volunteer firefighters, wildland firefighters, paramedics, emergency medical technicians, inspectors, or trainers. Graduates can expect positions as fire chiefs, company officers, public administrators, fire marshals, or educators.

Requirements

Effective Spring 2015

Students must complete an additional 60 credits including All-University Core Curriculum (AUCC) Categories 1-3.

Freshman

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Total Credits 30

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Total Credits 30

Junior

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<td>FESA 331</td>
<td>Structure Influence on Tactics and Strategy</td>
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<td>FESA 333</td>
<td>Proposals/Reports in Fire Service Management</td>
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<td>FESA 334</td>
<td>Orientation to Experiential Learning</td>
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FESA 335  Trends in Fire Science Technologies  3
FESA 336  Fire Emergency Services Administration  3
FESA 338  Essentials of Emergency Management  3
Electives  11

Total Credits  30

Senior

Select 6 credits from the following:

FESA 330  Industrial Processes and Fire Protection  3
FESA 337  Policy and Public Administration  3
FESA 339  Incident Command Systems  3
FESA 431  Emergency Medical Services Management  3
FESA 434  Training Program Management  3
FESA 435  Volunteer/Combination Organization Management  3
FESA 436  Fire Protection Through Model Building Codes  3
FESA 438  Prevention Program Management  3
FESA 432  Fire and Emergency Services Budgeting  3
FESA 433  Fire and Emergency: Human Resources  4B
FESA 437  Fire and Emergency: Legal Considerations  3
FESA 467  Integrated Management Simulation  4C
Electives  1

Total Credits  12

Program Total Credits:  120

1 Select enough credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major in Forestry

Forest landscapes are always changing, sometimes very slowly as a result of long-term processes, followed by rapid changes as a result of fires or harvesting. Sustaining forests in the modern world requires managers who understand these changes, and how forests connect to global, ecological, and social systems. The Department of Forest and Rangeland Stewardship provides forestry education that spans the entire range of experiences necessary to understand and manage forests. Curricula include a background in the biological, physical, social, and management sciences, followed by professional forestry courses. The degree is accredited by the Society of American Foresters. The curricula meet the Office of Personnel Management requirements for the forestry series (0460) and the forestry technician series (0462). The program includes a summer course at the CSU Mountain Campus for field studies in forest ecology, plant and animal identification, wildland fire measurements, forest mapping, and forest measurements. Forestry education is supported by departmental strengths in the full spectrum of land stewardship, including research, and application of knowledge to address real-world issues in forests and communities.

Four concentrations are available in the Forestry major—Forest Biology, Forest Fire Science, Forest Management, and Forestry Business.

Learning Outcomes

Students will:

• Effectively communicate knowledge of forestry and natural resources, both verbally and in writing

• Demonstrate proficiency in subject areas outside their major study focus, including principles/issues in wildlife, water, recreation, wilderness, soil, range, and fishery resources

• Demonstrate comprehensive knowledge of subject areas relevant to the major fields of study in forest sciences, including forest ecology and forest management, and apply this knowledge in a complex, problem-solving environment

Potential Occupations

Careers in forestry and natural resources are exceptionally varied, challenging, and personally satisfying. Opportunities are available in rural and urban settings worldwide. Participation in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Positions are available in industry, education, consulting, public service, and government agencies. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

The demographics of an aging workforce in federal natural resource management agencies will be creating significant opportunities for graduates of this program over the next three to five years.

Some examples of career opportunities include, but are not limited to: forest manager, forest/park ranger, environmental policy and conservation consultant, fire fighter/manager, natural resource journalist, naturalist, land use planner, geospatial information systems specialist, forest products business person, researcher/professor.

Concentrations

• Forest Biology Concentration

• Forest Fire Science Concentration
Major in Forestry, Forest Biology Concentration

Forest Biology is intended for students interested in forest ecology and tree biology. This concentration prepares students for graduate studies in forest biological sciences and eventual careers in teaching or research. The curriculum focuses on forest biology, forest ecology, natural resource management, and the physical sciences.

### Effective Spring 2016

#### Freshman

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<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecology and Measurements</td>
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#### Junior

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<td>F 321</td>
<td>Forest Biometry</td>
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<td>F 322</td>
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#### Senior

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<td>BSPM 365</td>
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Select 12 credits from the following Biology courses:

- BC 351 Principles of Biochemistry
- BSPM 302 Applied and General Entomology
- BSPM 361 Elements of Plant Pathology
- BZ 223 Plant Identification
- BZ 331 Developmental Plant Anatomy
- BZ 338 Comparative Morphology of Vascular Plants
- BZ 346 Population and Evolutionary Genetics
- BZ 441 Plant Physiology Laboratory
- BZ 450 Plant Ecology
- CHEM 341 Modern Organic Chemistry I
- CHEM 343 Modern Organic Chemistry II
- CHEM 344 Modern Organic Chemistry Laboratory
- F 324 Fire Effects and Adaptations
- FW 477 Wildlife Habitat Use and Management
- NR 300 Biological Diversity
- RS 351 Wildland Ecosystems in a Changing World
- RS 452 Rangeland Herbivore Ecology and Management
- SOCR 330 Principles of Genetics
- SOCR 440 Pedology
- SOCR 467 Soil and Environmental Chemistry
- SOCR 470 Soil Physics
- SOCR 471 Soil Physics Laboratory

Total Credits: 12

Program Total Credits: 26

At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

**Major Completion Map**

Distinctive Requirements for Degree Program:
At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

**Freshman**

**Semester 1**

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MATH 124 and MATH 125 must be completed by the end of Semester 1.

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**Semester 2**

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### Sophomore

#### Semester 3

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### Junior

#### Semester 6

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It is highly recommended that you complete 200 hours of professional work experience in your field of study prior to your final year.

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### Senior

#### Semester 8

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<td>Wildland Fire Behavior and Management</td>
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#### Semester 9

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The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

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**Major in Forestry, Forest Fire Science Concentration**

Forest Fire Science is the study of fire as an ecological process and its application as a forest management tool. Students learn how to control wildfires and how prescribed fires can enhance habitat, prepare seedbeds, control forest insects and disease, and reduce fuel hazards. The curriculum combines courses in fire science, forest biology, natural resource management, and the physical sciences to build skills for a career or graduate study in fire science.

**Requirements**

### Effective Spring 2016

**Freshman**

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<thead>
<tr>
<th>Course</th>
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<tr>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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**Sophomore**

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<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
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<td>F 312</td>
<td>Dendrology Lab</td>
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<td>LIFE 320</td>
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<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>STAT 301</td>
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<td>Global and Cultural Awareness</td>
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**Summer**

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**Junior**

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<td>F 321</td>
<td>Forest Biometry</td>
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<td>F 322</td>
<td>Economics of the Forest Environment</td>
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<td>Fire Effects and Adaptations</td>
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Major in Forestry, Forest Fire Science Concentration

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**Senior**

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<td>Forest Stand Management</td>
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<td>Advanced Wildland Fire Behavior and Management</td>
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**Program Total Credits:** 120

At least 200 hours of acceptable professional work experience in the student’s field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

1 Students considering graduate study in forest fire science should substitute MATH 155-MATH 255 or MATH 160-MATH 161 for MATH 141.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

Professional work experience is required in addition to NR 220

At least 200 hours of acceptable professional work experience in the student’s field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources. Students considering graduate school in Forest Fire Science should substitute MATH 155 / MATH 255 or MATH 160 / MATH 161 (with proper prerequisites) for MATH 141.

**Freshman**

**Semester 1**

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**Sophomore**

**Semester 3**

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**Semester 4**

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Total Credits: 14

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Total Credits: 7

**Junior**

**Semester 6**

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<td>F 311</td>
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<td>Forest Biometry</td>
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Total Credits: 17

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<td>F 324</td>
<td>Fire Effects and Adapations</td>
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<td>F 325</td>
<td>Silviculture</td>
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<td>Timber Harvesting and the Environment</td>
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<td>Natural Resources History and Policy</td>
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<td>Professional Work Experience</td>
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It is highly recommended that you complete 200 hours of professional work experience in your field of study prior to your final year.

Total Credits: 15

**Senior**

**Semester 8**

<table>
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<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>F 425</td>
<td>Advanced Wildland Fire Behavior and Management</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>NR 425</td>
<td>Natural Resource Policy and Sustainability</td>
<td>X</td>
<td>4B</td>
</tr>
<tr>
<td>NR 444</td>
<td>Fire Economics and Policy</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td>3</td>
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</tbody>
</table>

The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

Total Credits: 12

Program Total Credits: 120
Major in Forestry, Forest Management Concentration

Forest Management is a Forestry concentration designed to instill an understanding of the basic principles of forest ecology and forest management.

Although many students go on to graduate studies, the program is primarily intended for students interested in managing forestlands.

Effective Spring 2016

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
<td>1</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>NR 193</td>
<td>FRS First Year Seminar</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
<td>3B</td>
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Arts and Humanities: 3B 6
Global and Cultural Awareness: 3E 3

Total Credits: 28

**Sophomore**

<table>
<thead>
<tr>
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<th>Course Name</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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<tr>
<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
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<tr>
<td>F 312</td>
<td>Dendrology Lab</td>
<td></td>
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</tr>
<tr>
<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
<td>3A</td>
<td>3</td>
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<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td>3</td>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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Electives: 6

Total Credits: 26

**Summer**

<table>
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<tr>
<td>F 230</td>
<td>Forestry Field Measurements</td>
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</tr>
<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
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</table>

Total Credits: 7

**Junior**

<table>
<thead>
<tr>
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<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>F 311</td>
<td>Forest Ecology</td>
<td>3</td>
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<tr>
<td>F 321</td>
<td>Forest Biometry</td>
<td>3</td>
</tr>
<tr>
<td>F 322</td>
<td>Economics of the Forest Environment</td>
<td>3</td>
</tr>
<tr>
<td>F 325</td>
<td>Silviculture</td>
<td>3</td>
</tr>
<tr>
<td>F 330</td>
<td>Timber Harvesting and the Environment</td>
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</table>

Select 6 credits from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>F 425</td>
<td>Advanced Wildland Fire Behavior and Management</td>
<td>6</td>
</tr>
<tr>
<td>F 430</td>
<td>Forestry Field Practices</td>
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<tr>
<td>FW 260</td>
<td>Principles of Wildlife Management</td>
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<tr>
<td>GR 323/NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
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</tr>
<tr>
<td>HIST 355</td>
<td>American Environmental History</td>
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<tr>
<td>HORT 464A</td>
<td>Arboriculture</td>
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</tbody>
</table>
NR 400  Public Relations in Natural Resources
NR 421  Natural Resources Sampling
NR 423  Applications of Global Positioning Systems
NR 444  Fire Economics and Policy
PHIL 345  Environmental Ethics
POLS 361  U.S. Environmental Politics and Policy
RS 300  Rangeland Conservation and Stewardship
RS 312  Rangeland Plant Identification Lab
RS 329  Rangeland Assessment
RS 351  Wildland Ecosystems in a Changing World
RS 432  Rangeland Measurements and Monitoring
RS 452  Rangeland Herbivore Ecology and Management
RS 478  Ecological Restoration
SOC 320  Population-Natural Resources and Environment
SOCR 440  Pedology
JTC 300  Professional and Technical Communication (GT-CO3) 2 3
NR 319  Geospatial Applications in Natural Resources 4
NR 320  Natural Resources History and Policy 3D 3

Total Credits 31

Senior

BSPM 365  Integrated Tree Health Management 4
F 326  Wildland Fire Behavior and Management 3
F 421  Forest Stand Management 4A,4C 4
F 422  Quantitative Methods in Forest Management 3
NR 425  Natural Resource Policy and Sustainability 4B 3
Electives 11

Total Credits 28

Program Total Credits: 120

At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

1 RS 312 (see selection of courses listed in the junior year) must be taken concurrently with F 310/RS 310, which is required in the freshman year.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

Professional work experience is required in addition to NR 220.

At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
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<td>CO 150</td>
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<td>NR 193</td>
<td>FRS First Year Seminar</td>
<td>1A</td>
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<tr>
<td>Arts and Humanities</td>
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<tr>
<td>Total Credits</td>
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</table>
**Major in Forestry, Forest Management Concentration**

Global and Cultural Awareness  
MATH 117 and MATH 118 must be completed by the end of Semester 1.

<table>
<thead>
<tr>
<th>Semester 2</th>
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<td>CHEM 108</td>
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<td>MATH 141</td>
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<td>1B</td>
<td>3</td>
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<td>SPCM 200</td>
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<td>CO 150</td>
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Total Credits: 14

**Sophomore**

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<td>F 310/RS 310</td>
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<td>LIFE 320</td>
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Total Credits: 13

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<td>GR 304/WR 304</td>
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<td>3A</td>
<td>3</td>
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<tr>
<td>SOCR 240</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>STAT 301</td>
<td></td>
<td></td>
<td>X</td>
<td>3</td>
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Total Credits: 13

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<tbody>
<tr>
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Total Credits: 7

**Junior**

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<tbody>
<tr>
<td>F 311</td>
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<td>F 321</td>
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</tr>
<tr>
<td>JTC 300</td>
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<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>NR 319</td>
<td></td>
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<td>NR 320</td>
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Total Credits: 16

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<tbody>
<tr>
<td>F 322</td>
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<tr>
<td>F 325</td>
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<tr>
<td>F 330</td>
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<td>Directed Electives (See List on Concentration Requirements Tab)</td>
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<tr>
<td>Professional Work Experience</td>
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<td>0</td>
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<tr>
<td>It is highly recommended that you complete 200 hours of professional work experience in your field of study prior to your final year.</td>
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Total Credits: 15

**Senior**

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<tbody>
<tr>
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</tr>
<tr>
<td>F 326</td>
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</tr>
<tr>
<td>F 421</td>
<td></td>
<td></td>
<td>X</td>
<td>4A,4C</td>
</tr>
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Total Credits: 15
### Major in Forestry, Forestry-Business Concentration

The Forestry-Business Concentration is for students who wish to study forestry with an emphasis in business. The concentration prepares students for careers in the public sector or private enterprise. Students learn business applications as these relate to forestry. The curriculum includes a mix of Forest Management and Business Administration courses. Graduates may also be eligible for graduate studies in Forestry and M.B.A. programs.

### Requirements

### Effective Spring 2016

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
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</tr>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
<td>4</td>
</tr>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
<td>3</td>
</tr>
<tr>
<td>NR 193</td>
<td>FRS First Year Seminar</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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Arts and Humanities: 3B 6

Global and Cultural Awareness: 3E 3

Total Credits: 28

#### Sophomore

<table>
<thead>
<tr>
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<th>Credits</th>
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</thead>
<tbody>
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<tr>
<td>ECON 204</td>
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<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
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<td>F 312</td>
<td>Dendrology Lab</td>
<td></td>
<td>1</td>
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<tr>
<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
<td>3A</td>
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<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td></td>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>STAT 204</td>
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Electives: 8

Total Credits: 31

#### Junior

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<td>ACT 205</td>
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<td>F 311</td>
<td>Forest Ecology</td>
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<tr>
<td>F 321¹</td>
<td>Forest Biometry</td>
<td>3</td>
</tr>
<tr>
<td>F 322</td>
<td>Economics of the Forest Environment</td>
<td>3</td>
</tr>
<tr>
<td>F 325¹</td>
<td>Silviculture</td>
<td>3</td>
</tr>
<tr>
<td>F 330</td>
<td>Timber Harvesting and the Environment</td>
<td>3</td>
</tr>
<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>MKT 305</td>
<td>Fundamentals of Marketing</td>
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Program Total Credits: 120
Major in Forestry, Forestry-Business Concentration

**Elective**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
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**Senior**

<table>
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<tbody>
<tr>
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<td>BUS 205</td>
<td>Legal and Ethical Issues in Business</td>
<td>3</td>
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<tr>
<td>F 326</td>
<td>Wildland Fire Behavior and Management</td>
<td>3</td>
</tr>
<tr>
<td>F 421</td>
<td>Forest Stand Management</td>
<td>4A,4C</td>
</tr>
<tr>
<td>F 422</td>
<td>Quantitative Methods in Forest Management</td>
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<td>FIN 305</td>
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<td>MGT 305</td>
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<td>Natural Resource Policy and Sustainability</td>
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<tr>
<td>Elective</td>
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**Total Credits**

<table>
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<tr>
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<tbody>
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**Program Total Credits:**

<table>
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</thead>
<tbody>
<tr>
<td>120</td>
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</table>

At least 200 hours of acceptable professional work experience in the student’s field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

1. Students will need to obtain a prerequisite override to take this course.
2. Students wishing to continue in an MBA program should consider substituting MGT 320.

### Major Completion Map

**Distinctive Requirements for Degree Program:**

At least 200 hours of acceptable professional work experience in the student’s field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

#### Freshman

**Semester 1**

<table>
<thead>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 120</td>
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**Sophomore**

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**Program Total Credits:** 120
Major in Natural Resources Management

The goal of the Natural Resources Management major is to provide students with a broad-based understanding of the interconnectedness of social, political, and ecological systems. This knowledge will enable students to design sustainable solutions to address natural resource conservation and management problems. Students will learn about natural resource stewardship in both theory and practice, with an eye toward designing systems that are adaptable and resilient in light of the social and ecological complexity and change that characterize today’s challenges. Using an integrative approach, students will learn how to develop local solutions that are sustainable and ethical at larger, global scales. Environmental issues such as land-use change and planning, conservation biology, energy use, climate change, renewable resource management, and citizen engagement in place-based conservation will be addressed. Field measurements and field skills are important components of this major, and students are required to attend a four-week summer field course in ecological investigations and resource management.

Specific objectives are to provide each student with:

1. a science-based core curriculum in biological, physical, and social sciences;
2. a broad foundation in natural resources science and environmental management; and
3. specialization in a subject relevant to natural resources management.

The breadth of the major allows students to specialize in a wide range of topics, including conservation biology, geographic information systems, forest management, rangeland ecology, restoration ecology, natural resource policy, recreation resources, watershed management, wildlife management, or other topics related to natural resources management. This specialization is accomplished by coupling the major with a required minor, typically declared by a student’s junior year.

Students are encouraged to participate in internships and obtain related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your related work experience.

At the completion of the program, students should have the technical and communication skills that are critical to resolving important natural resource management problems.

Effective Fall 2015

Freshman

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At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

1 Students must complete the requirements for a minor in any discipline, or the interdisciplinary minor in either Conservation Biology or Environmental Affairs.

### Major Completion Map

**Distinctive Requirements for Degree Program:**

Each student is required to complete acceptable professional experience besides NR 220 and the requirements of a minor in any discipline.

#### Freshman

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#### Semester 4

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<tr>
<td>GEOL 120 Exploring Earth: Physical Geology (GT-SC2)</td>
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<td>GEOL 121</td>
<td>Introductory Geology Laboratory (GT-SC1)</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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**Semester 5**

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<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
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**Junior**

**Semester 6**

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<td>F 311</td>
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<td>RS 351</td>
<td>Wildland Ecosystems in a Changing World</td>
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<tr>
<td>NR 319</td>
<td>Geospatial Applications in Natural Resources</td>
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<tr>
<td>NR 326</td>
<td>Forest Vegetation Management</td>
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Geospatial minors take NR 322 instead of NR 319.

Forestry minors take F 325 instead of NR 326.

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**Semester 7**

Select one course from the following:

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<td>Economics of the Forest Environment</td>
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<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
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<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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**Semester 8**

Professional Work Experience

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**Senior**

**Semester 9**

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<tr>
<td>F 326</td>
<td>Wildland Fire Behavior and Management</td>
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<td>NR 400</td>
<td>Public Relations in Natural Resources</td>
<td>X</td>
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<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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**Semester 10**

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<tr>
<td>NR 420</td>
<td>Integrated Ecosystem Management</td>
<td>X</td>
<td>4C</td>
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<td>NR 421</td>
<td>Natural Resources Sampling</td>
<td>X</td>
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The benchmark courses for the 10th semester are the remaining courses in the entire program of study.

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**Program Total Credits:**

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**Major in Rangeland Ecology**

The major in Rangeland Ecology emphasizes interdisciplinary study, research, and management of the world’s rangelands. Rangelands occupy nearly 50 percent of the earth’s land surface and consist of natural grasslands, savannas, shrublands, riparian areas, deserts, tundra, and coastal marshes. Colorado is an ideal setting for the study of rangeland ecology and management with shortgrass steppe to the east and high elevation grasslands, woodlands, and riparian areas to the west.
Students are prepared to understand and manage the animal, soil, and vegetation resources on rangelands for state and federal land management agencies as well as a variety of private companies and nongovernmental agencies. The curricula are accredited by the Society for Range Management and meet U.S. Civil Service requirements for range conservationist and soil conservationist. With a few additional courses, graduates can meet U.S. Civil Service requirements for soil scientist and ecologist. Students develop an in-depth understanding of basic plant and animal biology; a basic understanding of the physical sciences as they relate to rangeland ecology; knowledge of important concepts of ecology and range management; an understanding of economics related to recognizing alternatives; and analytical and decision making skills. Students also develop communication, political and interpersonal skills to make their education effective.

Three concentrations are offered: Conservation and Management, Range and Forest Management, and Restoration Ecology.

### Learning Outcomes

Students will:

- Accurately and effectively communicate their understanding of rangeland ecology both verbally and in written form
- Demonstrate learning of subject areas outside their major study focus, including (but not restricted to) principles/issues in wildlife, water, recreation, wilderness, soil, range, and fishery resources; students will also demonstrate knowledge of social science analytic techniques
- Demonstrate comprehensive knowledge of subject areas relevant to the major fields of study in range ecology and management, including plant/animal interactions, grazing methods, range improvements, animal nutrition, plant ecology, and soil science, and apply this knowledge in a complex, problem-solving environment

### Potential Occupations

Examples of career opportunities include, but are not limited to: restoration ecologist, rangeland scientist, range management specialist, soil conservationist, soil scientist, rangeland conservationist, plant ecologist, riparian ecologist, ranch management, researcher, commercial sales and service representative, consultants, mine rehabilitation specialist, real estate/land manager, international rangeland specialist.

Participation in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and development. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

### Concentrations

- Conservation and Management Concentration
- Range and Forest Management Concentration
- Restoration Ecology Concentration

### Major in Rangeland Ecology, Conservation and Management Concentration

Rangeland Conservation and Management focuses on the stewardship of rangelands for multiple uses. These uses include both consumptive and non-consumptive activities such as recreation, preservation of wildlife habitat, providing for aesthetic beauty, livestock grazing, and ranching.

### Requirements

**Effective Fall 2015**

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>Numerical Trigonometry (GT-MA1)</td>
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<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
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<td>NR 193</td>
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<td>Arts and Humanities</td>
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<td>Global and Cultural Awareness</td>
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#### Sophomore

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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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<tr>
<td>BZ 223</td>
<td>Plant Identification</td>
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</table>
Select one course from the following:

FW 104  Wildlife Ecology and Conservation (GT-SC2)  3A
NR 300  Biological Diversity

Select one course from the following:

LAND 220/LIFE 220  Fundamentals of Ecology (GT-SC2)  3A
LIFE 320  Ecology

Select one course from the following:

NRRT 262  Principles of Environmental Communication
SPCM 200  Public Speaking
RS 300  Rangeland Conservation and Stewardship
SOCR 240  Introductory Soil Science
STAT 301 or 307  Introduction to Statistical Methods
Introduction to Biostatistics

Elective  2

Total Credits  27

Summer

NR 220  Natural Resource Ecology and Measurements  5

Total Credits  5

Junior

BSPM 308  Ecology and Management of Weeds  3
BZ 440  Plant Physiology  3

Select one course from the following:

CO 300  Writing Arguments (GT-CO3)  2
CO 301B  Writing in the Disciplines: Sciences (GT-CO3)  2
JTC 300  Professional and Technical Communication (GT-CO3)  2
F 310/RS 310  Forest and Rangeland Ecogeography  3
GR 304/WR 304  Sustainable Watersheds  3A  3

Select one course from the following:

NR 319  Geospatial Applications in Natural Resources
NR 322  Introduction to Geographic Information Systems
NR 320  Natural Resources History and Policy  3D  3
RS 312  Rangeland Plant Identification Lab  1
RS 351  Wildland Ecosystems in a Changing World  4A,4B  3
RS 432  Rangeland Measurements and Monitoring  2
SOCR 440 or 442  Pedology  4
Forest and Range Soils

Total Credits  32

Summer

RS 329  Rangeland Assessment  1

Total Credits  1

Senior

Select one course from the following:

ANEQ 472  Sheep Systems
ANEQ 478  Beef Systems
AREC 305  Agricultural and Resource Enterprise Analysis  3

Select one course from the following:

BZ 353/NR 353  Global Change Ecology, Impacts and Mitigation
BZ 450  Plant Ecology
BZ 471  Stream Biology and Ecology
LAND 444  Ecology of Landscapes
Select one course from the following:  
- NR 400: Public Relations in Natural Resources  
- NRRT 360: Group Decision Making in Natural Resources  
- NRRT 362: Environmental Conflict Management  
- NR 420: Integrated Ecosystem Management  
- NRRT 360: Group Decision Making in Natural Resources  
- NRRT 362: Environmental Conflict Management  
- RS 452: Rangeland Herbivore Ecology and Management  
- RS 478: Ecological Restoration  
- Electives:  

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Program Total Credits: 120

1. Students planning to take LIFE 320 in the sophomore year should take MATH 141 in the freshman year.
2. Students planning to take either NRRT 360 or NRRT 362 in the senior year should choose NRRT 262 in the sophomore year.
3. Students will need an appropriate override from the department of Agricultural and Resource Economics to take this course.

4. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Freshman**

**Semester 1**

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<td>BZ 120 Principles of Plant Biology (GT-SC1)</td>
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<td>Take MATH 141 if planning to take LIFE 320.</td>
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Total Credits 14

**Semester 2**

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<td>CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>CO 150 College Composition (GT-CO2)</td>
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<td>AUCC 1B (MATH) must be completed by the end of Semester 2.</td>
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Total Credits 14

**Sophomore**

**Semester 3**

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<tr>
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<td>Select one course from the following:</td>
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<td>LAND 220/ LIFE 220 Fundamentals of Ecology (GT-SC2)</td>
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<td>LIFE 320 Ecology</td>
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<td>RS 300 Rangeland Conservation and Stewardship</td>
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<tr>
<td>SOCR 240 Introductory Soil Science</td>
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Total Credits 13
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<td>Agricultural and Resource Economics (GT-SS1)</td>
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<td>ECON 202</td>
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Select one course from the following:

FW 104   Wildlife Ecology and Conservation (GT-SC2)  
NR 300   Biological Diversity

Select one course from the following:

SPCM 200   Public Speaking  
NRRT 262   Principles of Environmental Communication

Select one course from the following:

STAT 301   Introduction to Statistical Methods  
STAT 307   Introduction to Biostatistics

Elective

2

Take NRRT 262 if planning to take NRRT 360 or NRRT 362.

Total Credits 14

<table>
<thead>
<tr>
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<th>Critical</th>
<th>Recommended</th>
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<tbody>
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<td>Natural Resource Ecology and Measurements</td>
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Total Credits 5

**Junior**

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<tbody>
<tr>
<td>BSPM 308</td>
<td>Ecology and Management of Weeds</td>
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Select one course from the following:

NR 319   Geospatial Applications in Natural Resources  
NR 322   Introduction to Geographic Information Systems

F 310/RS 310  Forest and Rangeland Ecogeography | X | 3 |
RS 312   Rangeland Plant Identification Lab | X | 1 |
RS 351   Wildland Ecosystems in a Changing World |        | 4A,4B | 3 |
RS 432   Rangeland Measurements and Monitoring |     | 2 |

Total Credits 16

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<td>BZ 440</td>
<td>Plant Physiology</td>
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<td>Natural Resources History and Policy</td>
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Select one course from the following:

SOCR 440   Pedology  
SOCR 442   Forest and Range Soils

Select one course from the following:

CO 300   Writing Arguments (GT-CO3) | 2 |
CO 301B  Writing in the Disciplines: Sciences (GT-CO3) | 2 |
JTC 300   Professional and Technical Communication (GT-CO3) | 2 |

Total Credits 15

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Total Credits 1

**Senior**

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<td>Beef Systems</td>
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<td>Agricultural and Resource Enterprise Analysis</td>
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Select one course from the following:

ANEQ 472  Sheep Systems  
ANEQ 478  Beef Systems

AREC 305  Agricultural and Resource Enterprise Analysis

Select one course from the following:

3-4
BZ 353/ NR 353  Global Change Ecology, Impacts and Mitigation
BZ 450  Plant Ecology
BZ 471  Stream Biology and Ecology
LAND 444  Ecology of Landscapes

Select one course from the following:

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<td>NRRT 360</td>
<td>Group Decision Making in Natural Resources</td>
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**Elective**

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**Elective**

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The benchmark courses for the 10th semester are the remaining courses in the entire program of study.

**Total Credits**: 15

**Semester 10**

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<td>Integrated Ecosystem Management</td>
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<td>4C</td>
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<td>RS 452</td>
<td>Rangeland Herbivore Ecology and Management</td>
<td>X</td>
<td>4B</td>
<td>3</td>
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<td>RS 478</td>
<td>Ecological Restoration</td>
<td>X</td>
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<td>Elective</td>
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**Total Credits**: 13

**Program Total Credits**: 120

---

**Major in Rangeland Ecology, Range and Forest Management Concentration**

Range and Forest Management prepares students in multiple-use principles to manage and administer both rangeland and forest resources for federal and state government agencies or private business.

**Freshman**

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<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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**Total Credits**: 28

**Sophomore**

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<td>Principles of Microeconomics (GT-SS1)</td>
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<td>Forest and Rangeland Ecogeography</td>
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<td>Rangeland Conservation and Stewardship</td>
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<td>SOCR 240</td>
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<td>Economics of the Forest Environment</td>
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<td>Introduction to Geographic Information Systems</td>
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<td>RS 351</td>
<td>Wildland Ecosystems in a Changing World</td>
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<td>SOCR 478</td>
<td>Environmental Soil Sciences</td>
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<td>BSPM 365</td>
<td>Integrated Tree Health Management</td>
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<td>F 330</td>
<td>Timber Harvesting and the Environment</td>
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<td>F 421</td>
<td>Forest Stand Management</td>
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<td>F 422</td>
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<td>F 326</td>
<td>Wildland Fire Behavior and Management</td>
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**Program Total Credits:** 120
Major Completion Map

**Distinctive Requirements for Degree Program:**

Th curriculum for Rangeland Ecology - Range and Forest Management concentration assumes students enter the program calculus ready. Please see the advisor in the department about any un-met prerequisites.

---

### Freshman

#### Semester 1

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### Sophomore

#### Semester 3

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#### Semester 4

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<td>Public Speaking</td>
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### Junior

#### Semester 6

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<td>F 321</td>
<td>Forest Biometry</td>
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<td>Geospatial Applications in Natural Resources</td>
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<td>Introduction to Geographic Information Systems</td>
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<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<td>3D</td>
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1. Enough elective credits must be taken to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
RS 351  Wildland Ecosystems in a Changing World  4A,4B  3
F 312 must be completed by the end of Semester 6.  X

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**Semester 7**

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**Semester 8**

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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>RS 329</td>
<td>Rangeland Assessment</td>
<td>X</td>
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**Senior**

**Semester 9**

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<td>Select one course from the following:</td>
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<tr>
<td>ANEQ 472</td>
<td>Sheep Systems</td>
<td></td>
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<tr>
<td>ANEQ 478</td>
<td>Beef Systems</td>
<td></td>
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<tr>
<td>RS 432</td>
<td>Rangeland Measurements and Monitoring</td>
<td>X</td>
<td>2</td>
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| Select one course from the following: |
| BSPM 308 | Ecology and Management of Weeds |
| BSPM 365 | Integrated Tree Health Management |
| F 330   | Timber Harvesting and the Environment |
| F 421   | Forest Stand Management |
| F 422   | Quantitative Methods in Forest Management |
| F 326   | Wildland Fire Behavior and Management |
| Select one course from the following: |
| BZ 440  | Plant Physiology |
| F 324   | Fire Effects and Adaptations |
| SOCR 440 | Pedology |
| SOCR 442 | Forest and Range Soils |
| SOCR 478 | Environmental Soil Sciences |
| Elective | 3-4 |

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**Semester 10**

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<tbody>
<tr>
<td>NR 420</td>
<td>Integrated Ecosystem Management</td>
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<td>4C</td>
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<td>RS 452</td>
<td>Rangeland Herbivore Ecology and Management</td>
<td>X</td>
<td>4B</td>
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<tr>
<td>RS 478</td>
<td>Ecological Restoration</td>
<td>X</td>
<td>3</td>
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<tr>
<td>Electives</td>
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| The benchmark courses for the 10th semester are the remaining courses in the entire program of study. |

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Program Total Credits: 120

**Major in Rangeland Ecology, Restoration Ecology Concentration**

**Requirements**

Restoration Ecology provides students with skills important to restoration and rehabilitation of damaged rangeland ecosystems.
# Effective Fall 2015

## Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td>3A</td>
<td>4</td>
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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
<td>4</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
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Select 3 credits from the following:

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<th>Course</th>
<th>Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>1B</td>
<td>1</td>
</tr>
<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>1B</td>
<td>1</td>
</tr>
<tr>
<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
<td>1B</td>
<td>1</td>
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<tr>
<td>MATH 141</td>
<td>Calculus in Management Sciences (GT-MA1)</td>
<td>1B</td>
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<td>NR 193</td>
<td>FRS First Year Seminar</td>
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Arts and Humanities: 3B, Global and Cultural Awareness: 3E, Elective: 3

Total Credits: 28

## Sophomore

Select one from the following:

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<tbody>
<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td>BZ 223</td>
<td>Plant Identification</td>
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Select one from the following:

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<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
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<tr>
<td>NR 300</td>
<td>Biological Diversity</td>
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Select one from the following:

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<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND 220/LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
<td>3A</td>
<td>3</td>
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<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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<td>4</td>
</tr>
<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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Select one from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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Electives: 4

Total Credits: 29

## Summer

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<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
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Total Credits: 5

## Junior

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<tbody>
<tr>
<td>BSPM 308</td>
<td>Ecology and Management of Weeds</td>
<td></td>
<td>3</td>
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<tr>
<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
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Select two from the following:

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<thead>
<tr>
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<tbody>
<tr>
<td>BZ 440</td>
<td>Plant Physiology</td>
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<td>4-7</td>
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<tr>
<td>SOCR 341</td>
<td>Microbiology for Sustainable Agriculture</td>
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<td>3</td>
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<td>SOCR 350</td>
<td>Soil Fertility Management</td>
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<td>3</td>
</tr>
<tr>
<td>SOCR 440</td>
<td>Pedology</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>SOCR 442</td>
<td>Forest and Range Soils</td>
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Total Credits: 5
<table>
<thead>
<tr>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
<td></td>
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<td>3A</td>
<td>4</td>
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<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
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<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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</table>

1. Students planning to take LIFE 320 in the sophomore year should take MATH 141 in the freshman year.
2. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

---

**Major Completion Map**

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BZ 120</td>
<td>X</td>
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<td>3A</td>
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Select 3 credits from the following:

- MATH 117: College Algebra in Context I (GT-MA1) 1B
- MATH 118: College Algebra in Context II (GT-MA1) 1B
MATH 125  Numerical Trigonometry (GT-MA1)  1B
MATH 141  Calculus in Management Sciences (GT-MA1)  1B
NR 193  FRS First Year Seminar  1
Arts and Humanities  3B  3
Elective  3

<table>
<thead>
<tr>
<th>Semester 2</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>1A</td>
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<tr>
<td>Arts and Humanities</td>
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<td>3</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>AUCC 1B (MATH) must be completed by the end of Semester 2.</td>
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Total Credits  14

**Sophomore**

**Semester 3**

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<tr>
<td>BZ 223</td>
<td>Plant Identification</td>
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<tr>
<td>Select one course from the following:</td>
<td>X</td>
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<tr>
<td>LAND 220/ LIFE 220</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td></td>
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</tr>
<tr>
<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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<td>3</td>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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Total Credits  13

**Semester 4**

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<tr>
<td>AREC 202</td>
<td>Agricultural and Resource Economics (GT-SS1)</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
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<td>3C</td>
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<td>Select one course from the following:</td>
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<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
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<td>NR 300</td>
<td>Biological Diversity</td>
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<td>Select one course from the following:</td>
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<td></td>
<td>3</td>
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<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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<td>SPCM 200</td>
<td>Public Speaking</td>
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Total Credits  16

**Semester 5**

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<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
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Total Credits  5

**Junior**

**Semester 6**

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<th>Credits</th>
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<tr>
<td>BSPM 308</td>
<td>Ecology and Management of Weeds</td>
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<td>Select one course from the following:</td>
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<tr>
<td>NR 319</td>
<td>Geospatial Applications in Natural Resources</td>
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<td></td>
</tr>
<tr>
<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
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<td></td>
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<tr>
<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
<td>X</td>
<td>3</td>
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<td>RS 312</td>
<td>Rangeland Plant Identification Lab</td>
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<td>1</td>
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<td>RS 351</td>
<td>Wildland Ecosystems in a Changing World</td>
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<td>4A,4B</td>
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Total Credits  14

**Semester 7**

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<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<tr>
<td>GR 304/WR 304</td>
<td>Sustainable Watersheds</td>
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Select two courses from the following: 4-7

<table>
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<tbody>
<tr>
<td>BZ 440</td>
<td>Plant Physiology</td>
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<tr>
<td>SOCR 341</td>
<td>Microbiology for Sustainable Agriculture</td>
</tr>
<tr>
<td>SOCR 350</td>
<td>Soil Fertility Management</td>
</tr>
<tr>
<td>SOCR 440</td>
<td>Pedology</td>
</tr>
<tr>
<td>SOCR 442</td>
<td>Forest and Range Soils</td>
</tr>
<tr>
<td>SOCR 455</td>
<td>Soil Microbiology</td>
</tr>
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<td>SOCR 456</td>
<td>Soil Microbiology Laboratory</td>
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<td>SOCR 467</td>
<td>Soil and Environmental Chemistry</td>
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<td>SOCR 470</td>
<td>Soil Physics</td>
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<td>SOCR 471</td>
<td>Soil Physics Laboratory</td>
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Total Credits: 13

**Semester 8**

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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>RS 329</td>
<td>Rangeland Assessment</td>
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Total Credits: 1

**Senior**

**Semester 9**

Select one course from the following: 3-4

<table>
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<td>BZ 450</td>
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<tr>
<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
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<tr>
<td>RS 432</td>
<td>Rangeland Measurements and Monitoring</td>
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Select Electives: 5-9

Total Credits: 14

**Semester 10**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>NR 420</td>
<td>Integrated Ecosystem Management</td>
<td>X</td>
<td></td>
<td>4C</td>
<td>4</td>
</tr>
<tr>
<td>RS 452</td>
<td>Rangeland Herbivore Ecology and Management</td>
<td>X</td>
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<td>4B</td>
<td>3</td>
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<tr>
<td>RS 478</td>
<td>Ecological Restoration</td>
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Select two courses from the following: 6

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<tr>
<td>F 311</td>
<td>Forest Ecology</td>
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<tr>
<td>F 324</td>
<td>Fire Effects and Adaptations</td>
</tr>
<tr>
<td>F 325</td>
<td>Silviculture</td>
</tr>
<tr>
<td>F 326</td>
<td>Wildland Fire Behavior and Management</td>
</tr>
<tr>
<td>F 425</td>
<td>Advanced Wildland Fire Behavior and Management</td>
</tr>
<tr>
<td>NR 326</td>
<td>Forest Vegetation Management</td>
</tr>
</tbody>
</table>

The benchmark courses for the 10th semester are the remaining courses in the entire program of study.

Total Credits: 16

Program Total Credits: 120

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**Minor in Ecological Restoration**

The Ecological Restoration minor allows students in related majors to gain knowledge of the science and art of restoring ecosystems. This background is especially valuable to students who will be working in the various natural resource management fields. Since the prevalence of damaged, degraded or destroyed ecosystems is likely to increase in the future, restoration will be imperative for transforming these lands to once again provide ecosystem services.

**Requirements**

**Effective Spring 2013**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.
Minor in Forestry

The minor in Forestry provides students with the opportunity to obtain exposure to forest sciences. It provides insight into the management of forested lands and is particularly appropriate for students majoring in other natural resource disciplines or natural sciences.

Requirements

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
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<tr>
<td>NR 300</td>
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<tr>
<td>RS 300</td>
<td>Rangeland Conservation and Stewardship</td>
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Third Year

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<tr>
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<td>Select two courses from the following:</td>
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<td>F 311</td>
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<tr>
<td>F 325</td>
<td>Silviculture</td>
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<tr>
<td>FW 260</td>
<td>Principles of Wildlife Management</td>
<td></td>
</tr>
<tr>
<td>LAND 444</td>
<td>Ecology of Landscapes</td>
<td></td>
</tr>
<tr>
<td>NR 326</td>
<td>Forest Vegetation Management</td>
<td></td>
</tr>
<tr>
<td>WR 304/GR 304</td>
<td>Sustainable Watersheds</td>
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<td>F 324</td>
<td>Fire Effects and Adoptions</td>
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Fourth Year

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<td>Ecological Restoration</td>
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<td>Program Total Credits:</td>
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</table>

Minor in Range Ecology

Office in Forestry Building, Room 123
(970) 491-6911

The minor in Range Ecology provides an academic background for students interested in wildlife habitat, integrated land management, ranch management, applied ecology, and international development of arid lands. The minor provides additional flexibility for students who have a liberal arts or international education goal, but would like to increase their employment potential in an applied area. A minimum of 12 credits in the minor must be from Rangeland Ecosystem Science (RS) courses.

Requirements

Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
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<td>Select a minimum of 9 credits from the following:</td>
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<tr>
<td>BZ 223</td>
<td>Plant Identification</td>
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<td>LIFE 320</td>
<td>Ecology</td>
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<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
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</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
<td></td>
</tr>
<tr>
<td>Select a minimum of 4 credits from the following:</td>
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</tr>
<tr>
<td>RS 329</td>
<td>Rangeland Assessment</td>
<td></td>
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<td>RS 351</td>
<td>Wildland Ecosystems in a Changing World</td>
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</tr>
<tr>
<td>RS 452</td>
<td>Rangeland Herbivore Ecology and Management</td>
<td></td>
</tr>
<tr>
<td>RS 478</td>
<td>Ecological Restoration</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
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</tr>
</tbody>
</table>

1 SOCR 240 and one of BZ 223, F 210, or NR 220 are recommended.

Minor in Spatial Information Management

The minor in Spatial Information Management provides students with fundamental geospatial skills in natural resource management.

Minor in Forestry

The minor in Forestry provides students with the opportunity to obtain exposure to forest sciences. It provides insight into the management of forested lands and is particularly appropriate for students majoring in other natural resource disciplines or natural sciences.

Requirements

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<td>BSPM 356</td>
<td>Integrated Tree Health Management</td>
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<td>F 326</td>
<td>Wildland Fire Behavior and Management</td>
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<tr>
<td>F 310/RS 310</td>
<td>Forest and Rangeland Ecogeography</td>
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<tr>
<td>F 311</td>
<td>Forest Ecology</td>
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</tr>
<tr>
<td>F 312</td>
<td>Dendrology Lab 1</td>
<td>1</td>
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<tr>
<td>F 321</td>
<td>Forest Biometry</td>
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<tr>
<td>F 325</td>
<td>Silviculture</td>
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<tr>
<td>F 330</td>
<td>Timber Harvesting and the Environment</td>
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<tr>
<td>F 421</td>
<td>Forest Stand Management</td>
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<tr>
<td>NR 319</td>
<td>Geospatial Applications in Natural Resources</td>
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<td>Total Credits</td>
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</tbody>
</table>

1 F 312 must be taken concurrently with F 310/RS 310.

Minor in Range Ecology

Office in Forestry Building, Room 123
(970) 491-6911

The minor in Range Ecology provides an academic background for students interested in wildlife habitat, integrated land management, ranch management, applied ecology, and international development of arid lands. The minor provides additional flexibility for students who have a liberal arts or international education goal, but would like to increase their employment potential in an applied area. A minimum of 12 credits in the minor must be from Rangeland Ecosystem Science (RS) courses.

Requirements

Effective Spring 2014

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Select a minimum of 9 credits from the following:</td>
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<tr>
<td>BZ 223</td>
<td>Plant Identification</td>
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<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td></td>
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<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
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</tr>
<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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</tr>
<tr>
<td>Select a minimum of 4 credits from the following:</td>
<td>4</td>
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<tr>
<td>RS 329</td>
<td>Rangeland Assessment</td>
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</tr>
<tr>
<td>RS 351</td>
<td>Wildland Ecosystems in a Changing World</td>
<td></td>
</tr>
<tr>
<td>RS 452</td>
<td>Rangeland Herbivore Ecology and Management</td>
<td></td>
</tr>
<tr>
<td>RS 478</td>
<td>Ecological Restoration</td>
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</tr>
<tr>
<td>Total Credits</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

1 SOCR 240 and one of BZ 223, F 210, or NR 220 are recommended.

Minor in Spatial Information Management

The minor in Spatial Information Management provides students with fundamental geospatial skills in natural resource management.
Geographic information systems, global positioning systems, and remote sensing are key tools for the workforce of the 21st Century.

This minor is designed for students desiring to gain technical skills and to increase their employment potential in an applied area. The SIMs minor has a broad interdisciplinary appeal due to the ability to adapt and use these technologies in many disciplines.

**Requirements**

**Effective Fall 2007**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tr>
<td>Lower Division</td>
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<tr>
<td>CS 150</td>
<td>Interactive Programming with Java</td>
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<td>Lower Division or Upper Division</td>
<td>Select a minimum of 4 credits from the following:</td>
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<tr>
<td>CS 200</td>
<td>Algorithms and Data Structures</td>
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<tr>
<td>ESS 210/GR 210</td>
<td>Physical Geography</td>
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<tr>
<td>GR 100</td>
<td>Introduction to Geography (GT-SS2)</td>
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<tr>
<td>NR 401</td>
<td>Techniques in Public Relations</td>
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<tr>
<td>NR 440</td>
<td>Applications in Conservation Planning</td>
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<tr>
<td>NR 493</td>
<td>Seminar on GIS and Remote Sensing</td>
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<tr>
<td>NR 495</td>
<td>Independent Study</td>
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<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
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<td>STAT 312</td>
<td>Statistics for Behavioral Sciences II</td>
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<td>STAT 460</td>
<td>Applied Multivariate Analysis</td>
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<tr>
<td>Upper Division</td>
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<td>NR 322</td>
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<td>NR 323/GR 323</td>
<td>Remote Sensing and Image Interpretation</td>
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<tr>
<td>NR 422</td>
<td>GIS Applications in Natural Resource Management</td>
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<td>NR 423</td>
<td>Applications of Global Positioning Systems</td>
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<tr>
<td>NR 493</td>
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Total Credits 21

1 At least one credit must be NR 493 or NR 495.

2 May be repeated as an elective.

---

**Master of Natural Resources Stewardship, Plan C, Ecological Restoration Specialization**

**Requirements**

**Effective Fall 2016**

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>F 520</td>
<td>Advanced Quantitative Methods in Forestry</td>
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<tr>
<td>NR 566</td>
<td>Natural Resource Inventory and Data Analysis</td>
<td></td>
</tr>
<tr>
<td>RS 532</td>
<td>Rangeland Ecosystem Sampling</td>
<td></td>
</tr>
<tr>
<td>NR 444</td>
<td>Fire Economics and Policy</td>
<td>3</td>
</tr>
<tr>
<td>or NR 568</td>
<td>Economics of Forests, Restoration and Fire</td>
<td></td>
</tr>
<tr>
<td>NR 565</td>
<td>Principles of Natural Resources Ecology</td>
<td>3</td>
</tr>
<tr>
<td>or NR 578</td>
<td>Ecology of Disturbed Lands</td>
<td></td>
</tr>
<tr>
<td>NR 567</td>
<td>Analysis of Environmental Impact</td>
<td>3</td>
</tr>
<tr>
<td>NR 693</td>
<td>Natural Resources Stewardship Seminar</td>
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**Ecological Restoration Specialization**

Select a minimum 9 credits from the following: 9

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<th>Code</th>
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<tbody>
<tr>
<td>BSPM 551</td>
<td>Advanced Integrated Pest Management</td>
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<tr>
<td>BSPM 556</td>
<td>Biological Control of Plant Pests</td>
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<tr>
<td>BZ 572</td>
<td>Phytoremediation</td>
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<tr>
<td>CIVE 613</td>
<td>River Restoration Design</td>
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<tr>
<td>ECOL 505</td>
<td>Foundations of Ecology</td>
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<td>ESS 575</td>
<td>Models for Ecological Data</td>
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<tr>
<td>ESS 660</td>
<td>Biogeochemical Cycling in Ecosystems</td>
<td></td>
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<tr>
<td>NR 552</td>
<td>Ecology of Military Lands</td>
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<tr>
<td>NR 577</td>
<td>Wetland Ecology and Restoration</td>
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<tr>
<td>NR 678</td>
<td>Advanced Ecological Restoration</td>
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<tr>
<td>SOCR 567</td>
<td>Environmental Soil Chemistry</td>
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</tbody>
</table>

Electives 1 7

Total Credits 30

A minimum of 30 credits are required to complete this program.

1 Select courses with approval of advisor and graduate committee.

---

**Master of Natural Resources Stewardship, Plan C, Forest Sciences Specialization**

**Requirements**

**Effective Spring 2016**

<table>
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1 Select courses with approval of advisor and graduate committee.
### Master of Natural Resources Stewardship, Plan C, Rangeland Ecosystems Specialization

**Requirements**  
**Effective Fall 2014**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td></td>
<td><strong>Core Courses</strong></td>
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<tr>
<td></td>
<td>Select one course from the following:</td>
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<tr>
<td>F 520</td>
<td>Advanced Quantitative Methods in Forestry I</td>
<td></td>
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<tr>
<td>NR 566</td>
<td>Natural Resource Inventory and Data Analysis</td>
<td></td>
</tr>
<tr>
<td>RS 532</td>
<td>Rangeland Ecosystem Sampling</td>
<td></td>
</tr>
<tr>
<td>NR 444</td>
<td>Fire Economics and Policy</td>
<td>3</td>
</tr>
<tr>
<td>or NR 568</td>
<td>Economics of Forests, Restoration and Fire</td>
<td></td>
</tr>
<tr>
<td>NR 565</td>
<td>Principles of Natural Resources Ecology</td>
<td>3</td>
</tr>
<tr>
<td>or NR 578</td>
<td>Ecology of Disturbed Lands</td>
<td></td>
</tr>
<tr>
<td>NR 567</td>
<td>Analysis of Environmental Impact</td>
<td>3</td>
</tr>
<tr>
<td>NR 693</td>
<td>Natural Resources Stewardship Seminar</td>
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<td><strong>Rangeland Ecosystems Specialization</strong></td>
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<td>RS 452</td>
<td>Rangeland Herbivore Ecology and Management</td>
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<tr>
<td>RS 500</td>
<td>Advanced Rangeland Management</td>
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<tr>
<td>RS 531</td>
<td>World Grassland Ecogeography</td>
<td></td>
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<tr>
<td>RS 552</td>
<td>Range Animal Production and Management</td>
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<tr>
<td>RS 565</td>
<td>Riparian Ecology and Management</td>
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<tr>
<td>RS 630</td>
<td>Ecology of Grasslands and Shrublands</td>
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<td>RS 651</td>
<td>Primary Production and Decomposition</td>
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<td>SOCR 440</td>
<td>Pedology</td>
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<td>SOCR 540</td>
<td>Soil-Plant-Nutrient Relationships</td>
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<td>SOCR 571</td>
<td>Foundations of Soil Science</td>
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</table>

A minimum of 30 credits are required to complete this program.

1. Select courses with approval of advisor and graduate committee.

---

### Master of Natural Resources Stewardship, Plan C, Sustainable Military Lands Management Specialization

**Requirements**  
**Effective Fall 2014**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tr>
<td></td>
<td><strong>Core Courses</strong></td>
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<tr>
<td></td>
<td>Select one course from the following:</td>
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</tr>
<tr>
<td>F 520</td>
<td>Advanced Quantitative Methods in Forestry I</td>
<td></td>
</tr>
<tr>
<td>NR 566</td>
<td>Natural Resource Inventory and Data Analysis</td>
<td></td>
</tr>
<tr>
<td>RS 532</td>
<td>Rangeland Ecosystem Sampling</td>
<td></td>
</tr>
<tr>
<td>NR 444</td>
<td>Fire Economics and Policy</td>
<td>3</td>
</tr>
<tr>
<td>or NR 568</td>
<td>Economics of Forests, Restoration and Fire</td>
<td></td>
</tr>
<tr>
<td>NR 565</td>
<td>Principles of Natural Resources Ecology</td>
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<td>NR 567</td>
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<td>NR 693</td>
<td>Natural Resources Stewardship Seminar</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Sustainable Military Lands Management Specialization</strong></td>
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<tr>
<td>NR 550</td>
<td>Sustainable Military Lands Management</td>
<td>3</td>
</tr>
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<td>NR 551</td>
<td>Cultural Resource Management on Military Lands</td>
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<tr>
<td>NR 552</td>
<td>Ecology of Military Lands</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Electives</strong></td>
<td>7</td>
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<tr>
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<td><strong>Total Credits</strong></td>
<td>30</td>
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</tbody>
</table>

A minimum of 30 credits are required to complete this program.

1. Select courses with approval of advisor and graduate committee.
Department of Geosciences

Office in Natural Resources Building, Room 322
(970) 491-7826
warnercnr.colostate.edu/geosciences-home

Richard Aster, Department Head

Undergraduate

Majors
- Major in Geology
  - Environmental Geology Concentration
  - Geology Concentration
  - Geophysics Concentration
  - Hydrogeology Concentration

Minors
- Minor in Geology

Graduate

Graduate Programs in Geosciences

The department offers graduate programs leading to Master of Science in Geosciences and Doctor of Philosophy in Earth Sciences degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Geosciences. (http://warnercnr.colostate.edu/geosciences-home)

Master Programs
- Master of Science in Geosciences, Plan A*
- Master of Science in Geosciences, Plan B*

Ph.D.
- Ph.D. in Earth Sciences
- Ph.D. in Earth Sciences, Geosciences Specialization
- Ph.D. in Earth Sciences, Watershed Science Specialization

* Please see department for program of study.

Courses

Geosciences (GEOL)

GEOL 110  Introduction to Geology—Parks and Monuments  Credits: 3 (3-0-0)
Course Description: Credit allowed for only one of the following
GEOL 110, GEOL 120, GEOL 122, GEOL 124, GEOL 150. Offered only online.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 120  Exploring Earth: Physical Geology (GT-SC2)  Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to earth processes, materials, resources, and hazards.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following:
GEOL 120, GEOL 122, GEOL 124, GEOL 150. Required field trips.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 121  Introductory Geology Laboratory (GT-SC1)  Credit: 1 (0-2-0)
Course Description: Laboratory applications of introductory geology.
Prerequisite: GEOL 120, may be taken concurrently or GEOL 122, may be taken concurrently or GEOL 124, may be taken concurrently.
Registration Information: Credit not allowed for both GEOL 121 and GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

GEOL 122  The Blue Planet: Geology of Our Environment (GT-SC2)  Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to geological processes, natural hazards, earth resources, and their impacts on society.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following:
GEOL 120, GEOL 122, GEOL 124, GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC2).

GEOL 124  Geology of Natural Resources (GT-SC2)  Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to the origin, use and environmental impact of geological resources extracted from the Earth.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following:
GEOL 120, GEOL 122, GEOL 124, GEOL 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).
GEOL 150  Physical Geology for Scientists and Engineers  Credits: 4 (3-3-0)
Course Description: Earth materials, structures, and surface processes.
Geologic analysis using field data, topographic and geologic maps, and
aerial photos.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit
allowed for only one of the following: GEOL 120, GEOL 122, GEOL 124,
GEOL 150. Credit not allowed for both GEOL 150 and GEOL 121. Required
field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 154  Historical and Analytical Geology  Credits: 4 (3-3-0)
Course Description: Physical and biological history of Earth with
introduction to laboratory, computer, and field techniques.
Prerequisite: GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 232  Mineralogy  Credits: 3 (2-3-0)
Course Description: Crystal structures, crystal chemistry, rock-forming
and economically important minerals, crystal growth and defects,
physical properties of minerals.
Prerequisite: (CHEM 111, may be taken concurrently) and (GEOL 120 or
GEOL 122 or GEOL 124 or GEOL 150) and (MATH 124 or MATH 155 or
MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 250  The Solid Earth  Credits: 3 (2-2-0)
Course Description: Structure, flow, and composition of the deep Earth;
introduction to geophysics; tests of plate tectonic theory.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and
(MATH 124) and (MATH 125 or MATH 155 or MATH 160 or MATH 161 or
MATH 255).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 332  Optical Mineralogy  Credits: 2 (1-2-0)
Course Description: Fundamental light optics in crystalline substances;
optical indicatrix; isotropic, uniaxial, and biaxial substances; common
minerals in thin section.
Prerequisite: GEOL 232, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 342  Paleontology  Credits: 3 (2-3-0)
Course Description: Description of invertebrates, vertebrates, and plants
and their distribution in earth history.
Prerequisite: GEOL 154.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 344  Stratigraphy and Sedimentology  Credits: 4 (3-3-0)
Course Description: Description, genesis, correlation, and age of
sediments, sedimentary rocks and layered rock sequences.
Prerequisite: GEOL 154 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 364  Igneous and Metamorphic Petrology  Credits: 4 (3-3-0)
Course Description: Identification, classification, geochemistry,
petrogenesis of igneous and metamorphic rocks; textural interpretation
of hand samples and thin sections.
Prerequisite: GEOL 232 with a minimum grade of C-
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 366  Sedimentary Petrology and Geochemistry  Credits: 4 (3-3-0)
Course Description: Composition, identification, and classification of
sedimentary rocks; geochemical processes affecting sedimentary rocks
and surficial deposits.
Prerequisite: CHEM 113 and GEOL 154 and GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 372  Structural Geology  Credits: 4 (3-3-0)
Course Description: Stress and strain in rocks, geometry of deformed
rocks, and tectonic principles.
Prerequisite: (GEOL 154 and PH 141, may be taken concurrently) and
(MATH 125 or MATH 155 or MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 376  Geologic Field Methods  Credits: 3 (1-4-0)
Course Description: Scientific, surveying, and mapping methods used in
geologic field studies; proposal, map, and report preparation.
Prerequisite: GEOL 344 and GEOL 372, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
GEOL 384 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Instruction and practice in laboratory instruction in lower-division departmental courses.
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 401 Geology of the Rocky Mountain Region  Credit: 1 (0-3-0)
Course Description: Field course; geology of the local Rocky Mountain region.
Prerequisite: GEOL 154.
Registration Information: May be taken up to 3 times for credit. Does not count as a geology elective in the departmental major. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 424 Modern Gas and Oil  Credits: 3 (3-0-0)
Also Offered As: CIVE 424.
Course Description: Introduction to opportunities and challenges of modern gas and oil development, including synergies with other energy sources.
Prerequisite: None.
Registration Information: Junior standing or above; completion of AUCC category 3A. Credit not allowed for both GEOL 424 and CIVE 424.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 436 Geology Summer Field Course  Credits: 6 (0-18-0)
Course Description: Geologic mapping, measuring sections, interpreting geologic history in Colorado. Required comprehensive reports, geologic maps, and cross sections.
Prerequisite: GEOL 364 and GEOL 376.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 442 Applied Geophysics  Credits: 4 (3-2-0)
Course Description: Geophysical exploration methods emphasizing hydrocarbon and mineral exploration, hydrogeology, and engineering applications.
Prerequisite: GEOL 372 and MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 446 Environmental Geology  Credits: 3 (3-0-0)
Course Description: Geology applied to environmental problems.
Prerequisite: (GEOL 120, may be taken concurrently or GEOL 122 or GEOL 124 or GEOL 150) and (PH 141 and CHEM 111).
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 447 Mineral Deposits  Credits: 3 (2-3-0)
Course Description: Occurrence, origin, and exploration of economic metallic mineral deposits.
Prerequisite: GEOL 366, may be taken concurrently and GEOL 372.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 452 Hydrogeology  Credits: 4 (3-3-0)
Course Description: Interaction of water and geologic materials; surface and groundwater; quantitative analysis and geologic effects on quality and flow of groundwater.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210) and (MATH 161 or MATH 255) and (PH 141).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 454 Geomorphology  Credits: 4 (3-3-0)
Course Description: Origin of landforms; morphology and processes.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or GR 210) and (STAT 301 or STAT 307 or STAT 315).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 457 Environmental Geology  Credits: Var[1-18] (0-0-0)
Course Description: Instruction in laboratory instruction in lower-division departmental courses.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 492 Seminar  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 492A Independent Study: Environmental/Engineering Geology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 492B Independent Study: Geomorphology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 492C Independent Study: Mineralogy/Petrology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
GEOL 494D  Independent Study: Geoscience Field Studies  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494E  Independent Study: Paleontology/Stratigraphy  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494F  Independent Study: Sedimentology  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494G  Independent Study: Structural Geology  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494I  Independent Study: Geophysics  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 498  Research  Credits: Var[1-6] (0-0-0)
Course Description: None.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 530  Advanced Petrology  Credits: 3 (2-2-0)
Course Description: Igneous and metamorphic processes and products explored through thermodynamics, phase equilibria, and textural analysis.
Prerequisite: GEOL 344.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 543  Carbonate Sedimentology  Credits: 2 (1-3-0)
Course Description: Recognition of carbonate grains, cement types, and carbonate depositional environments, and their response to sea-level changes.
Prerequisite: GEOL 344.
Registration Information: Junior standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 546  Sedimentary Basin Analysis  Credits: 4 (3-3-0)
Course Description: Sedimentologic data base, correlation, mapping, facies models, classification, and evolution of sedimentary basins. Applications to petroleum exploration.
Prerequisite: GEOL 344.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 547  Ore Deposit Geochemistry  Credits: 3 (3-0-0)
Course Description: Geochronological techniques applied to the geology, exploration, and environmental analysis of ore deposits.
Prerequisite: GEOL 447.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 551  Groundwater Modeling  Credits: 3 (3-0-0)
Course Description: Groundwater modeling from a geologic perspective. Conceptual models and computer modeling of groundwater flow and solute transport.
Prerequisite: CIVE 423 or GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 552  Advanced Topics in Hydrogeology  Credits: Var[2-3] (0-0-0)
Course Description: Current literature, new techniques, legislative and political developments in hydrogeology, and appropriate case histories.
Prerequisite: GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 560  Clay Mineralogy  Credits: 3 (2-3-0)
Course Description: Crystallography and chemistry of clay minerals. Applications to geology, engineering, and soil sciences, x-ray analysis of clays.
Prerequisite: GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 562  Statistical Data Analysis in Earth Resources  Credits: 3 (3-0-0)
Course Description: Statistical parameters, sequential data, map analysis, and multivariate data.
Prerequisite: STAT 340 and STAT 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 565  Petroleum Geochemistry and Geology  Credits: 3 (3-0-0)
Course Description: Geochemistry and geology of hydrocarbon generation, migration, and accumulation. Applications to hydrocarbon exploration.
Prerequisite: GEOL 366 and GEOL 372.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
GEOL 567 Sedimentary Geochemistry Credits: 3 (3-0-0)  
Course Description: Geochemical processes affecting sedimentary rocks and other surficial materials.  
Prerequisite: GEOL 366.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 570 Plate Tectonics Credits: 3 (3-0-0)  
Course Description: Examination of the historical development of plate tectonic theory and its application to understanding geological processes.  
Prerequisite: GEOL 364 and GEOL 372 and PH 142.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 572 Advanced Structural Geology Credits: 4 (3-3-0)  
Course Description: Rheology, deformation mechanisms, structural associations and advanced methods of structural analysis.  
Prerequisite: GEOL 436.  
Registration Information: Must register for lecture and laboratory. Required field trips. Graduate standing can substitute for prerequisite course.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 574 Geodynamics Credits: 3 (3-0-0)  
Course Description: Continuum mechanics applied to understanding of deformation within the earth. Stress and strain as tensors, with application to various geological settings; plate flexure and isostasy; steady state and time dependent heat conduction in a geological context; fluid mechanics of the earth.  
Prerequisite: GEOL 250 and MATH 261 and PH 141.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 575 Subsurface Geophysical Mapping Credits: 4 (3-2-0)  
Course Description: Advanced techniques for creating subsurface geological maps based on seismic reflection and well log data.  
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.  
Registration Information: Must register for lecture and laboratory.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 576 Exploration Seismology Credits: 3 (3-0-0)  
Course Description: Seismic exploration methods, including theory, data acquisition, and data processing.  
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 578 Global Seismology Credits: 4 (3-2-0)  
Course Description: Quantitative introduction to seismology; basics of seismic data analysis; fundamentals of wave propagation; earthquakes; structure of the Earth.  
Prerequisite: PH 142 and MATH 261.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 579 Solid Earth Inverse Methods and Practices Credits: 3 (3-0-0)  
Prerequisite: (MATH 161 or MATH 255) and (MATH 229) and (STAT 301 or STAT 315).  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 601 Geoscience Approaches and Thesis Proposals Credit: 1 (0-0-1)  
Course Description: Core concepts of scientific approaches, local geology of Colorado, and preparation of geoscience thesis proposals.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing in geosciences. Required field trips.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

GEOL 652 Fluvial Geomorphology Credits: 3 (3-0-0)  
Course Description: Geomorphology of channels, slopes, and drainage systems.  
Prerequisite: GEOL 120.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: Yes.

GEOL 684 Supervised College Teaching Credits: Var(1-5) (0-0-0)  
Course Description: Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

GEOL 692 Seminar Credits: Var(1-18) (0-0-0)  
Course Description: Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

GEOL 695 Independent Study Credits: Var(1-18) (0-0-0)  
Course Description: Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
Major in Geology

The Geology major constitutes a broad curriculum that allows students to obtain a sound academic and practical basis for professional geosciences careers. Common careers include private and public sector water, energy, mineral and other natural resources, geological hazards, regulatory management, and education. The major also provides a solid background for subsequent graduate training in specialized fields that include economic geology, hydrology, geophysics, environmental geology, resources management, public policy, and many other areas.

The Geology curriculum provides a technical background within the broader framework of a liberal education. Emphasis is placed on integrating field studies in the Rocky Mountains and elsewhere with on-campus classroom and laboratory work. In addition to a solid core in geology, students complete substantial course work in math, the physical sciences, communications, and the liberal arts that lead to effective quantitative, decision making, and communications skills. Four Geology major concentrations are offered: Environmental Geology, Geology, Geophysics, and Hydrogeology.

Learning Outcomes

Students will demonstrate:

- A solid foundation in the physical sciences and broad understanding of geological processes
- Application of scientific reasoning skills to data analysis and problem solving in the geosciences, both individually and in teams
- An awareness of sociopolitical and economic factors and ethical practices and standards that apply to careers in geosciences

Potential Occupations

A variety of opportunities exist for Geology graduates in the private and public sectors. Energy companies, industry service companies, mining companies, power companies, computer software companies, and diverse entrepreneurs all hire geologists for exploration, development, production, communications, and research. Federal government agencies use geologists for mapping, oil-gas-coal-groundwater-geothermal resource evaluation, geochemical and resource-related water studies, leasing and conservation studies, resource restoration and rehabilitation programs, hazards mitigation, regulatory activities, and research. State and local governments typically hire geologists for geologic and soils mapping, natural resource and hazards evaluation and mitigation, public information, consulting, and communications. Environmental, engineering, and groundwater firms employ geologists for mapping, restoration and rehabilitation planning, monitoring and evaluation of geologic hazards, and site evaluation for feasibility and implementation of construction projects, water management and reuse evaluation, groundwater pollution assessment and remediation, and contaminant prevention. Schools, colleges, universities, national laboratories, and private research firms employ geoscientists in a variety of teaching, research, and administrative positions.

Participation in internships, volunteer activities, or cooperative education and public outreach is highly recommended and supported by the department to enhance practical training and development. Graduates who wish to go on to advanced studies acquire a strong disciplinary base to continue in a number of geoscience disciplines and related fields of study, including seismology, hydrology, meteorology, oceanography, and the space sciences. Geoscientists with advanced degrees can attain more responsible professional positions with the possibility of rising to top professional levels of management. Example career possibilities include, but are not limited to: educator, professor, environmental or geological consultant, exploration geologist, petroleum geologist, environmental geologist, geophysicist, hydrologist, mining geologist, oceanographer, production geologist, researcher, resource evaluator, geobiologist, or seismologist. With additional training, geosciences graduates may also pursue careers in business, law, medicine, public policy, and other diverse professional fields. By obtaining teaching certification, graduates can become educators in Earth sciences and related subjects in primary and secondary schools.

Concentrations

- Environmental Geology Concentration
• Geology Concentration
• Geophysics Concentration
• Hydrogeology Concentration

**Major in Geology, Environmental Geology Concentration**

Environmental Geology students develop expertise in surface and shallow-subsurface processes that shape the Earth and provide important soil and water resources and services for human and natural use. Graduates will be prepared for employment opportunities that address environmental implications of geological process and human activities on Earth. The curriculum emphasizes courses spanning the fundamentals of geology, surface, and shallow-subsurface processes, field-based research methodologies, and environmental geology. The concentration empowers students to pursue positions with public, private, and nonprofit organizations that address environmental/natural resource management issues, regulatory agency compliance, hazard identification and mitigation, and fundamental scientific investigations that can inform natural resource policy and decision making and promote sound stewardship of Earth resources. The curriculum also provides a strong foundation for those planning to continue on to graduate studies.

**Requirements**

### Effective Fall 2015

#### Freshman

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<th>Course</th>
<th>Title</th>
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<th>Credits</th>
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<td>General Chemistry Lab I (GT-SC1)</td>
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<td>GEO 150</td>
<td>Physical Geology for Scientists and Engineers</td>
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<td>GEO 154</td>
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<td>Global Cultural Awareness</td>
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#### Sophomore

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<td>CHEM 114</td>
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<td>Writing Arguments (GT-CO3)</td>
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<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>Mineralogy</td>
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<td>Stratigraphy and Sedimentology</td>
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<td>GEO 364</td>
<td>Igneous and Metamorphic Petrology</td>
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#### Junior

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<td>Structural Geology</td>
<td>4B</td>
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<td>GEO 376</td>
<td>Geologic Field Methods</td>
<td>4A,4C</td>
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<td>NR 319 or 322</td>
<td>Geospatial Applications in Natural Resources</td>
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<td>Groundwater Modeling</td>
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<td>Soil and Environmental Chemistry</td>
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1. GEOL 120, GEOL 122, or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.
2. MATH 340 may be substituted for STAT 301.
3. A maximum of one credit may be counted toward Directed Technical Electives.
4. May be selected as a Directed Technical Elective if not taken in the junior year to fulfill the physics requirement.
5. Select enough elective credits to bring the program total to a minimum of 120-122 credits, of which at least 42 must be upper-division (300- to 400-level).
# Major Completion Map

## Freshman

### Semester 1

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<tr>
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<td>College Composition (GT-CO2)</td>
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<td>Calculus for Physical Scientists I (GT-MA1)</td>
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**Total Credits**: 14

### Semester 2

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<tbody>
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<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>X</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>X</td>
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<tr>
<td>GEOL 154</td>
<td>Historical and Analytical Geology</td>
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Global and Cultural Awareness

**CO 150 and MATH 160 must be completed by the end of Semester 2.**

**Total Credits**: 12

## Sophomore

### Semester 3

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<td>General Chemistry Lab II</td>
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<td>Mineralogy</td>
<td>X</td>
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<tr>
<td>GEOL 344</td>
<td>Stratigraphy and Sedimentology</td>
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<td>4</td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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**Total Credits**: 15

### Semester 4

Select one course from the following:

- CO 300 Writing Arguments (GT-CO3) 2
- CO 301B Writing in the Disciplines: Sciences (GT-CO3) 2
- JTC 300 Professional and Technical Communication (GT-CO3) 2
- GEOL 364 Igneous and Metamorphic Petrology X 4B 4
- PH 141 Physics for Scientists and Engineers I (GT-SC1) X 3A 5

**CHEM 113 must be completed by the end of Semester 4.**

**Total Credits**: 12

## Junior

### Semester 5

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<td>Introductory Soil Science</td>
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Select one course from the following:

- PH 142 Physics for Scientists and Engineers II (GT-SC1) 3A
- SOCR 470 Soil Physics

Select one course from the following:

- MATH 340 Introduction to Ordinary Differential Equations
- STAT 301 Introduction to Statistical Methods
- STAT 315 Statistics for Engineers and Scientists

**GEOL 344 and PH 141 must be completed by the end of Semester 5.**

**Total Credits**: 14-16

### Semester 6

Select one course from the following:

- GEOL 372 Structural Geology X 4B 4
- GEOL 376 Geologic Field Methods X 4A,4C 3

**NR 319 Geospatial Applications in Natural Resources**
### Major in Geology, Geology Concentration

The Geology concentration provides comprehensive, broad-based training in geology, emphasizing a practical and field-oriented approach that is well-suited to employment opportunities as a geologist in the energy and mining industries, government agencies, consulting firms, and other geologic fields. In addition the Geology concentration provides an excellent background for many other professions, including secondary school teachers, science writers, lawyers specializing in environment and resource issues, and resource or hazards specialists in the insurance, real estate, and securities fields. The Geology concentration provides students with an excellent background to specialize in later and a strong basis for graduate studies in geology.

### Requirements

#### Effective Fall 2015

**Freshman**

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<td>GEOL 154</td>
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Social and Behavioral Sciences

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<td>GEOL 372</td>
<td>Structural Geology</td>
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<td>Geologic Field Methods</td>
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Arts and Humanities

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<td>Sedimentary Petrology and Geochemistry</td>
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Geology electives³

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Select 3 credits from Technical Elective Department List

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**Major Completion Map**

### Freshman

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### Semester 2

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<td>NR 322</td>
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Major in Geology, Geophysics Concentration

The Geophysics concentration combines a strong foundation in geology with additional depth in geophysics, physics, and mathematics, and in associated quantitative and computer skills. Students pursuing this concentration are well prepared both for employment opportunities in a wide variety of geological or geotechnical fields, and for subsequent graduate training in geophysics, including seismology, geodynamics, energy exploration, environmental geophysics, and resource management.

Requirements

Effective Fall 2015

Freshman

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Sophomore

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Junior

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<td>Geologic Field Methods</td>
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Select one from the following:  
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CS 157  
Introduction to C Programming II  
CS 158/MATH 158  
Mathematical Algorithms in C  
MATH 151  
Mathematical Algorithms in Matlab I  

Select one from the following:  
3  
MATH 369  
Linear Algebra I  
STAT 301  
Introduction to Statistical Methods  
STAT 315  
Statistics for Engineers and Scientists  

Arts and Humanities  
3B  
3  
Historical Perspectives  
3D  
3  

Total Credits  
32  

Summer  
GEOL 436  
Geology Summer Field Course  
4C  
6  

Total Credits  
6  

Senior  

Geology electives  
Select 9 credits from the Directed Technical electives list  
9  

GEOL 442  
Applied Geophysics  
GEOL 570  
Plate Tectonics  
GEOL 578  
Global Seismology  
MATH 332  
Partial Differential Equations  
MATH 450  
Introduction to Numerical Analysis I  
MATH 530  
Mathematics for Scientists and Engineers  
PH 341  
Mechanics  
PH 351  
Electricity and Magnetism  
PH 353  
Optics and Waves  

Electives  
5  

Total Credits  
20  

Program Total Credits:  
120  

---

1 GEOL 120, GEOL 122 or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.
2 Select two upper-division geology courses of three or more credits each.
3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

---

**Major Completion Map**

**Freshman**

<table>
<thead>
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CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2. X

| Total Credits | 14 |

**Sophomore**

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**Junior**

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<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
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<td>MATH 369</td>
<td>Linear Algebra I</td>
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<td>Mathematical Algorithms in C</td>
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<td>MATH 372</td>
<td>Structural Geology</td>
<td>X</td>
<td>4B</td>
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<td>GEOL 376</td>
<td>Geologic Field Methods</td>
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<td>4A,4C</td>
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<td>Introduction to Ordinary Differential Equations</td>
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**Senior**

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Directed Technical Electives (See Department List on Concentration Requirements tab) 

Electives 

STAT 301, STAT 315, or MATH 369 must be completed by the end of Semester 8. 

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<thead>
<tr>
<th>Semester 9</th>
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<tr>
<td>Directed Technical Electives (See Department List on Concentration Requirements tab)</td>
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The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

| Total Credits | 12 |

| Total Credits | 8 |
| Program Total Credits: | 120 |

## Major in Geology, Hydrogeology Concentration

The Hydrogeology concentration provides training in geological aspects of water resources and allied disciplines, while ensuring that students are well prepared for a variety of geological fields. Students pursuing this concentration will be particularly well prepared for employment in environmental, engineering, water resource, geotechnical, and groundwater firms, government agencies managing or assessing water resources, or for subsequent graduate training in hydrogeology or other water resource-related disciplines.

### Requirements

**Effective Fall 2015**

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CO 150</td>
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<td>GEOL 150</td>
<td>Physical Geology for Scientists and Engineers</td>
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<td>Historical and Analytical Geology</td>
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<td>MATH 124</td>
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<td>Global and Cultural Awareness</td>
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| Total Credits | 32 |

#### Sophomore

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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<td>GEOL 232</td>
<td>Mineralogy</td>
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<td>GEOL 344</td>
<td>Stratigraphy and Sedimentology</td>
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<td>GEOL 364</td>
<td>Igneous and Metamorphic Petrology</td>
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<td>Historical Perspectives</td>
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| Total Credits | 30 |
### Junior

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<td>Calculus for Physical Scientists III</td>
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Select one from the following:

- PH 142 Physics for Scientists and Engineers II (GT-SC1) 3A
- SOCR 470 Soil Physics
- STAT 301 or 315 Introduction to Statistical Methods
  Statistics for Engineers and Scientists 3

**Arts and Humanities**

- Total Credits 3

**Summer**

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**Total Credits** 24-26

### Senior

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<td>GEOL 454</td>
<td>Geomorphology</td>
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<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
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<td>NR 319 or 322</td>
<td>Geospatial Applications in Natural Resources</td>
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<tr>
<td>WR 416</td>
<td>Land Use Hydrology</td>
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Select 6 credits from Directed Technical Electives

- CIVE 423 Groundwater Engineering
- CIVE 440 Nonpoint Source Pollution
- CIVE 532 Wells and Pumps
- GEOL 424 Modern Gas and Oil
- GEOL 442 Applied Geophysics
- GEOL 446 Environmental Geology
- GEOL 447 Mineral Deposits
- GEOL 498 Research
- GEOL 546 Sedimentary Basin Analysis
- GEOL 551 Groundwater Modeling
- GEOL 552 Advanced Topics in Hydrogeology
- MATH 332 Partial Differential Equations
- MATH 369 Linear Algebra I
- MATH 450 Introduction to Numerical Analysis I
- SOCR 470 Soil Physics
- WR 418 Land Use and Water Quality

**Elective**

- Total Credits 1-3

**Total Credits** 26-28

**Program Total Credits:** 120

---

1. GEOL 120, GEOL 122, or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.
2. At least one of the selected courses must be a geology course.
3. Only one credit may be used to fulfill the Directed Technical Elective requirement.
4. May be selected as a Directed Technical Elective if not taken in the junior year to fulfill the physics requirement.
5. Select enough credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300-400-level).

**Major Completion Map**
### Freshman

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### Sophomore

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<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
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<td>Historical Perspectives</td>
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<td>CHEM 113 must be completed by the end of Semester 4.</td>
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### Junior

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<tr>
<td>STAT 301 Introduction to Statistical Methods</td>
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Minor in Geology

The minor in Geology is open to students in all majors to provide curricular depth in Geosciences. Example majors who may benefit from a Geology minor include Natural Science, Natural Resources, Business, Engineering, and Agriculture.

Requirements

Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<td>Exploring Earth: Physical Geology (GT-SC2) and Introductory Geology Laboratory (GT-SC1)</td>
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<td>Group B:</td>
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<tr>
<td>GEOL 122 &amp; GEOL 121</td>
<td>The Blue Planet: Geology of Our Environment (GT-SC2) and Introductory Geology Laboratory (GT-SC1)</td>
<td>4</td>
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Ph.D. in Earth Sciences

Requirements

Effective Fall 2008

Ph.D. students must complete 72 semester credits beyond those required for the B.S. degree. They must satisfy a breadth requirement by:

Taking a six-credit upper-division or graduate-level course sequence outside of the student’s discipline. Most students will take their breadth requirement courses outside of their department.

At least 10 credits beyond the master’s degree must be earned in regular courses numbered 500-level or above.

A minimum of 72 credits are required to complete this program.
Ph.D. in Earth Sciences, Geosciences Specialization

Requirements

Grandfather

Ph.D. students must complete 72 semester credits beyond those required for the B.S. degree. They must satisfy a breadth requirement by:

Taking a six-credit upper-division or graduate-level course sequence outside of the student’s discipline. Most students will take their breadth requirement courses outside of their department.

At least 10 credits beyond the master’s degree must be earned in regular courses numbered 500-level or above.

A minimum of 72 credits are required to complete this program.

Ph.D. in Earth Sciences, Watershed Science Specialization

Requirements

Grandfather

Ph.D. students must complete 72 semester credits beyond those required for the B.S. degree. They must satisfy a breadth requirement by:

Taking a six-credit upper-division or graduate-level course sequence outside of the student’s discipline. Most students will take their breadth requirement courses outside of their department.

At least 10 credits beyond the master’s degree must be earned in regular courses numbered 500-level or above.

A minimum of 72 credits are required to complete this program.

Department of Human Dimensions of Natural Resources

Professor Alan Bright, Graduate Coordinator

Undergraduate

Majors

• Major in Human Dimensions of Natural Resources
• Major in Natural Resource Tourism
  • Global Tourism Concentration
  • Natural Resource Tourism Concentration

• Major in Natural Resource Recreation and Tourism
  • Environmental Communication Concentration (No new students are being accepted into this concentration.)
  • Parks and Protected Area Management Concentration (No new students are being accepted into this concentration.)

Graduate

Graduate Programs in Human Dimensions of Natural Resources

Programs lead to a Master of Science in Conservation Leadership, Master of Tourism Management and Master of Science and Doctor of Philosophy degrees in Human Dimensions of Natural Resources. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Human Dimensions and Natural Resources (http://warnercnr.colostate.edu/hdnr-graduate-study/graduate-program).

Master Programs

• Master of Science in Conservation Leadership, Plan A
• Master of Science in Conservation Leadership, Plan B
• Master of Science in Conservation Leadership, Plan A, Global Specialization
• Master of Science in Conservation Leadership, Plan B, Global Specialization
• Master of Science in Human Dimensions of Natural Resources, Plan A
• Master of Science in Human Dimensions of Natural Resources, Plan B, Conservation Leadership Specialization
• Master of Tourism Management, Plan C

Ph.D.

• Ph.D. in Human Dimensions of Natural Resources*

Certificates

• Graduate Certificate in Ski Area Management

*Please see department for program of study.

Courses

Subjects in this department include: Natural Resource Recreation and Tourism (NRRT).
Natural Resource Recreation and Tourism (NRRT)

NRRT 100  Foundations of Recreation and Tourism  Credits: 3 (3-0-0)
Course Description: Current concepts, terminology, suppliers, and the social, economic, and personal benefits from recreation, leisure, and tourism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 231  Principles-Parks/Protected Area Management  Credits: 3 (3-0-0)
Course Description: Tools and strategies used by managers in parks and protected areas.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 262  Principles of Environmental Communication  Credits: 3 (3-0-0)
Course Description: Principles of environmental communication, education, and interpretation for managing natural and cultural resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 270  Principles of Natural Resource Tourism  Credits: 3 (3-0-0)
Course Description: Tourism and private commercial outdoor recreation industry in America.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 300  Conservation Leadership  Credits: 3 (3-0-0)
Course Description: Approaches to conservation leadership.
Prerequisite: NRRT 262 and NRRT 231.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 320  International Issues-Recreation and Tourism  Credits: 3 (3-0-0)
Course Description: History, development, and preservation of international parks, preserves, tourist and historical sites.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 321  Travel Abroad-Marine Ecotourism-Bahamas  Credits: 3 (1-3-1)
Course Description: Environmental and socio-cultural aspects of marine ecotourism in the Bahamas.
Prerequisite: None.
Registration Information: Minimum GPA 2.500; 3 credits in natural sciences. Passport and ability to swim will be required.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 330  Social Aspects of Natural Resource Management  Credits: 3 (3-0-0)
Course Description: Conceptual frameworks of human dimension research and its application to resource management decisions.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 331  Management of Parks and Protected Areas  Credits: 3 (2-3-0)
Course Description: Comprehensive assessment of problems confronted by park professionals and the techniques and tools applied to their solution.
Prerequisite: NRRT 231 and NRRT 330.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 340  Principles in Conservation Planning and Mgmt  Credits: 3 (3-0-0)
Course Description: Social, economic, legal, and ecological concepts that shape planning and management frameworks within conservation.
Prerequisite: NRRT 231.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 350  Wilderness Leadership  Credits: 3 (2-2-0)
Course Description: Practical and philosophical aspects of wilderness usage including safety, group dynamics, and backcountry skills.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 351  Wilderness Instructors  Credits: 3 (2-2-0)
Course Description: Preparation to safely lead and instruct groups in outdoor wilderness programs; further refine skills including judgement and leadership.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
NRRT 360 Group Decision Making in Natural Resources Credits: 3 (3-0-0)
Course Description: Theoretical, critical, and practical approaches to group decision making, collaboration, and teamwork related to natural resource management.
Prerequisite: NRRT 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 361 Natural Resources and the Media Credits: 3 (3-0-0)
Course Description: Representations of the environment in the media and strategies for effective media relations about natural resource issues.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 362 Environmental Conflict Management Credits: 3 (3-0-0)
Course Description: Theoretical, critical and practical approaches to negotiation, mediation and conflict management strategies related to natural resources.
Prerequisite: NRRT 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 363 Outdoor Recreation Programming Credits: 3 (2-2-0)
Course Description: Develop administrative and program planning skills for private, public, and nonprofit recreation tourism organizations.
Prerequisite: NRRT 270.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 367 Human Dimensions Research and Analysis Credits: 3 (2-2-0)
Course Description: Application of human dimensions (recreation) research and analysis techniques to natural resource issues.
Prerequisite: STAT 201.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 368 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 370 Managing Tourism in the E-Commerce Era Credits: 3 (3-0-0)
Course Description: E-commerce foundations, business models, and practices in the recreation and travel industry.
Prerequisite: NRRT 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 371 Techniques in Interpretation Credits: 3 (2-1-0)
Course Description: Intermediate techniques in interpretation including exhibit design and construction, personal program development and visitor studies.
Prerequisite: NRRT 262.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 372 Tourism Promotion Credits: 3 (3-0-0)
Course Description: Planning, development, and implementation of marketing programs specifically applied to the recreation, travel, and tourism industries.
Prerequisite: NRRT 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 431  Protected Areas, Working Lands, Livelihoods  Credits: 3 (3-0-0)
Course Description: Management practices of protected areas and working lands that work at the interface of ecological, human, and economic dimensions.
Prerequisite: (NRRT 231) and (LAND 220 or LIFE 220).
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 432  Foundations of Forest Recreation  Credit: 1 (0-0-1)
Course Description: History, philosophy, role, and sources of information of the Forest Service and National Forest System.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 433  Meeting Needs of Recreation Users  Credits: 4 (0-0-4)
Course Description: Visitor behavior, communications and conflicts, working with volunteers, programs, partnerships, quality service, and role of interpretive services.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 434  Recreation Special Uses and Appeals  Credits: 3 (0-0-3)
Course Description: Special use benefits, authorities, planning, terms and conditions, administration and kinds, appeal review, discretionary review and decisions.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 435  Trails, Facility Design, Operation, Maintenance  Credits: 3 (0-0-3)
Course Description: Trail planning, development, maintenance; recreation site planning, design operation, maintenance; visitor and resource protection.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 436  Recreation, Visual, Cultural Resource Management  Credits: 2 (0-0-2)
Course Description: Economic analysis, recreation opportunity spectrum, visual and cultural resource management.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 437  Off-Road Vehicle, River, and Winter Recreation  Credits: 2 (0-0-2)
Course Description: History, authorities, planning, management, and coordination of off-road, river, and winter recreation.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 438  Management of Wilderness  Credits: 2 (0-0-2)
Course Description: Forest Service role, management principles, legislative differences, components, public education, visitor management, and wilderness management skills.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 439  Open Space and Natural Area Management  Credits: 3 (3-0-0)
Course Description: Acquisition of, planning for, and management of local government and private open space and natural areas.
Prerequisite: NR 440 or NRRT 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 440  Applications in Environmental Communication  Credits: 3 (3-0-0)
Course Description: Application of tools and techniques for communicating to audiences about issues related to conservation, environment and sustainability.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 441  Spatial Analysis of Protected Areas  Credits: 3 (2-2-0)
Course Description: Special use benefits, authorities, planning, terms and conditions, administration and kinds, appeal review, discretionary review and decisions.
Prerequisite: NRRT 231.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 442  Tourism Planning  Credits: 3 (3-0-0)
Course Description: Planning for regional tourism resources and programs.
Prerequisite: NRRT 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 457  Off-Highway Vehicle Recreation in America  Credits: 3 (0-0-3)
Course Description: Overviews the supply and demand of off-highway vehicle recreation.
Prerequisite: None.
Registration Information: Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 458  Planning for Off-Highway Vehicle Recreation  Credits: 3 (0-0-3)
Course Description: Develop working knowledge of the planning tools, concept, and process for off-highway vehicle recreation.
Prerequisite: NRRT 457.
Registration Information: Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 459  Managing Off-Highway Vehicle Recreation  Credits: 3 (0-0-3)
Course Description: Developing working knowledge of the management tools, techniques, trends, and challenges with off-highway vehicle recreation.
Prerequisite: NRRT 457.
Registration Information: Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 460  Event and Conference Planning  Credits: 3 (3-0-0)
Also Offered As: RRM 460.
Course Description: Foundation in planning, organizing, and producing special events and conferences. Functions and strategies necessary for effective event management.
Prerequisite: NRRT 270 or RRM 101.
Registration Information: Credit not allowed for both NRRT 460 and RRM 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 462  Environmental Communication-Natural Resources  Credits: 3 (3-0-0)
Course Description: Exploration and application of theories, concepts, and techniques for successful environmental communication in natural resources.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 463  Non-Profit Administration in Conservation  Credits: 3 (3-0-0)
Course Description: Role of NGOs in protected-area management and conservation education; models for development, including grant writing, in conservation.
Prerequisite: NRRT 231 and NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 470  Tourism Impacts  Credits: 3 (3-0-0)
Course Description: Social, cultural, physical, and economic impacts of tourism; techniques for assessing impacts.
Prerequisite: NRRT 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 471  Starting and Managing Tourism Enterprise  Credits: 3 (3-0-0)
Course Description: Aspects of starting and managing a tourism enterprise.
Prerequisite: NRRT 231 or NRRT 262 or NRRT 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 473  Ski Area Management  Credits: 3 (3-0-0)
Course Description: Ski area management; history and trends, ski area operations, human resource management, environmental issues, liability, resort planning and design.
Prerequisite: NRRT 270.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 483  Off-Campus Study  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

NRRT 487  Internship  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495A  Independent Study: Administration  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495B  Independent Study: Management  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 495C  Independent Study: Interpretation  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
NRRT 495 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
NRRT 499 Senior Thesis Credits: Var[1-18] (0-0-0)
Course Description: Independent research project culminating in thesis presented to faculty mentor.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
NRRT 504 Water-Based Recreation Credits: 2 (2-0-0)
Course Description: Identify issues and management strategies for recreation utilization of water resources.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 505 Environmental Education History and Theory Credits: 3 (3-0-0)
Course Description: History and theories, planning and instruction; outcomes, historical events; ecological literacy; experiential learning models.
Prerequisite: None.
Registration Information: Upper-division course in natural resources. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 506 Methods in Environmental Education Research Credits: 3 (3-0-0)
Course Description: Research methods and designs; literature reviews, needs assessments and program evaluation of environmental education in informal settings.
Prerequisite: None.
Registration Information: Upper-division course in natural resources. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 507 Environmental Education Planning Credits: 3 (3-0-0)
Course Description: Informal learning theory; evaluation models focused on education in informal settings such as nature centers, zoos, etc.
Prerequisite: None.
Registration Information: One upper-division course in natural resources, biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 508 Current Issues in Environmental Education Credits: 3 (3-0-0)
Course Description: Impact of current events, legislation, demographic changes, and other events on informal environmental education.
Prerequisite: None.
Registration Information: One upper-division course in natural resources, biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 509 Science Education in Informal Settings Credits: 3 (3-0-0)
Course Description: Theory, application of teaching environmental science in informal settings—nature centers, zoos, etc. Inquiry, safety, group management, experience.
Prerequisite: None.
Registration Information: Upper division course in natural resources or related field. NOTE: This course does not count toward State teacher licensure.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 520 Perspectives on Ski Area Management Credits: 2 (2-0-0)
Course Description: Introduction to the history of skiing, the ski industry, and ski area management around the world.
Prerequisite: None.
Registration Information: Bachelor’s degree required. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 521 Sustainable Ski Area Management Credits: 2 (2-0-0)
Course Description: Examines sustainability issues that relate specifically to ski resort development and management.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 522 Ski Area Operations and Human Resources Credits: 2 (2-0-0)
Course Description: Examines ski area operations and services.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 523 Strategic Ski Area Marketing and Management Credits: 2 (2-0-0)
Course Description: Examines strategic management and marketing concepts within a ski area context.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 524 Ski Area Finance and Investment Credits: 2 (2-0-0)
Course Description: Examines finance and investment considerations relevant to ski area operations and management.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 525 Ski Area Planning and Development Credits: 2 (2-0-0)
Course Description: Examines the various planning and design considerations for ski area development and expansion.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 550 Ecotourism Credits: 3 (3-0-0)
Course Description: Concept of ecotourism, impacts associated with ecotourism, and role of education/interpretation in mitigating these impacts.
Prerequisite: NRRT 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 565 Research-Human Dimensions Natural Resources Credits: 3 (3-0-0)
Course Description: Theory, research, literature review, hypothesis development, scientific writing, proposal development.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 560 Tourism Industry Concepts and Practices Credits: 2 (0-0-2)
Course Description: Primary conceptual issues on contemporary tourism important to comprehend the practice of tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 601 Tourism Quantitative Analysis I Credits: 2 (0-0-2)
Course Description: Statistical techniques used by researchers to inform and support tourism decision-making.
Prerequisite: STAT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 602 Tourism Quantitative Analysis II Credits: 2 (0-0-2)
Course Description: Examines the domestic and international sources of data and their applications for decision-making in tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 605 Human Dimensions of Natural Resources Theory Credits: 3 (3-0-0)
Course Description: Application of theories and conceptual approaches from social sciences to study of recreation behavior and natural resource issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 610 Natural Resource Management and Tourism Credits: 2 (0-0-2)
Course Description: Connection between the management of tourism resources and the changing conditions of the natural world.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 615 Sustainable Tourism Development Foundation Credits: 2 (0-0-2)
Course Description: Theory, practice, history, terminology, and issues surrounding sustainable tourism development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 620 Organizational Management in Tourism Credits: 2 (0-0-2)
Course Description: Concepts of organizational management in the context of tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 625 Communication/Conflict Management in Tourism Credits: 2 (0-0-2)
Course Description: Negotiation tools for effective organizational communication/conflict management in tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 650 Financial Management in Tourism Credits: 2 (0-0-2)
Course Description: Concepts in financial management applied to travel and tourism organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 655 Tourism Marketing Concepts and Applications Credits: 2 (0-0-2)
Course Description: Marketing processes as they apply to travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 660 Law and Legal Liability in Tourism Credits: 2 (0-0-2)
Course Description: Concepts in legal liability and business law in the context of travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 662 Global Tourism Policy Credits: 2 (0-0-2)
Course Description: Major global policies, trends, and challenges facing the travel and tourism industry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 665 Survey Research and Analysis Credits: 3 (2-2-0)
Course Description: Survey research, design, and analysis in human dimensions of natural resources.
Prerequisite: NRRT 565 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 666 Qualitative Research in NRRT Credits: 3 (3-0-0)
Course Description: Qualitative approaches to tourism research and techniques from a range of disciplinary backgrounds; methodological aspects.
Prerequisite: NRRT 565.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 671 Strategic Management for Travel and Tourism Credits: 2 (0-0-2)
Course Description: Factors, tools, and techniques for strategic management of a travel and tourism business or organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 679A Current Topics in Nature Based Tourism Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 679B Current Topics in Nature Based Tourism Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 695A Independent Study: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
NRRT 695B Independent Study: Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695C Independent Study: Interpretation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695D Independent Study: Landscape Planning Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 765 Applied Multivariate Analysis Credits: 3 (2-2-0)
Course Description: Application and interpretation of multivariate statistics to human dimensions in natural resources, recreation, and tourism.
Prerequisite: NRRT 665.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Restaurant and Resort Management (RRM)

RRM 101 Hospitality Industry Credits: 3 (3-0-0)
Course Description: Food service, lodging, and tourism industries; exploration of various industry segments and career opportunities.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 200 Hotel Operations Credits: 3 (3-0-0)
Course Description: Front office and room management as related to resorts and hotels. Computer application, financial controls, employee and guest relations.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 310 Food Service Systems-Operations Credits: 3 (3-0-0)
Course Description: Technical operations: menu planning, evaluation, recipe standardization, forecasting, food cost, sanitation, hospital food distribution systems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 311 Food Service Systems-Production and Purchasing Credits: 3 (3-0-0)
Course Description: Quantity food production principles, purchasing specifications, market channels.
Prerequisite: RRM 310.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 312 Hospitality Human Resource Management Credits: 3 (2-0-1)
Course Description: Principles and practices of employee management in the hospitality industry including employment process, training, legal aspects, performance.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
RRM 330 Alcohol Beverage Control and Management  Credits: 2 (2-0-0)
Course Description: Classification, production, and service of controlled beverages; management of facilities and people; safe service training; financial controls.
Prerequisite: CHEM 103, may be taken concurrently or CHEM 107, may be taken concurrently or CHEM 111, may be taken concurrently.
Term Offered: Fall.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

RRM 340 Restaurant Operations  Credits: 4 (0-8-0)
Course Description: Principles, practices, philosophies, systems for daily operation of casual or fine dining restaurant; focus on developing solutions to problems.
Prerequisite: RRM 101, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 345 Food, Beverage, and Labor Cost Control  Credits: 3 (3-0-0)
Course Description: Cost control for food, beverage, and labor in the hospitality industry.
Prerequisite: ACT 205 and CS 110.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 350 Restaurant and Resort Marketing  Credits: 3 (3-0-0)
Course Description: Restaurant and resort operations marketing, including planning, promotion, and special industry considerations.
Prerequisite: RRM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 356 Practicum  Credits: 3 (0-0-9)
Course Description: Practicum in Hospitality Management.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 391 Food and Society  Credits: 3 (2-0-1)
Course Description: Exploration of the influence of food, dining, and nutrition on cultural aspects of the human experience.
Prerequisite: (SOC 100 or PSY 100) and (AMST 100 or AMST 101 or ANTH 140 or NR 320 or HIST 252 or HIST 255 or ETST 250 or ETST 252 or ETST 255 or HIST 101 or HIST 150 or HIST 151 or HIST 171 or HIST 250 or HIST 121) and (AGRI 270 or HIST 170 or AM 250 or ANTH 200 or LJPN 250 or LB 170 or LB 171 or ETST 100 or PHIL 170 or SA 482 or E 228 or E 245 or HIST 100 or ETST 205 or ETST 253 or ETST 256 or PF 110 or HIST 115 or HIST 120 or IE 116 or IE 270 or IE 370 or HORT 171 or SOCR 171 or SOC 205 or POLS 232 or POLS 131 or POLS 241 or ECON 211 or LCHI 250 or LARA 250 or LFRE 250 or LGER 250 or LRUS 250 or LSPA 250 or AGRI 116).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 400 Understanding Food  Credits: 3 (2-0-1)
Course Description: Exploration of the influence of food, dining, and nutrition on cultural aspects of the human experience.
Prerequisite: (SOC 100 or PSY 100) and (AMST 100 or AMST 101 or ANTH 140 or NR 320 or HIST 252 or HIST 255 or ETST 250 or ETST 252 or ETST 255 or HIST 101 or HIST 150 or HIST 151 or HIST 171 or HIST 250 or HIST 121) and (AGRI 270 or HIST 170 or AM 250 or ANTH 200 or LJPN 250 or LB 170 or LB 171 or ETST 100 or PHIL 170 or SA 482 or E 228 or E 245 or HIST 100 or ETST 205 or ETST 253 or ETST 256 or PF 110 or HIST 115 or HIST 120 or IE 116 or IE 270 or IE 370 or HORT 171 or SOCR 171 or SOC 205 or POLS 232 or POLS 131 or POLS 241 or ECON 211 or LCHI 250 or LARA 250 or LFRE 250 or LGER 250 or LRUS 250 or LSPA 250 or AGRI 116).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 405 Catering Techniques and Culinary Arts  Credits: 3 (0-6-0)
Course Description: Management of advanced techniques in culinary technique; catering of food and beverages for special functions.
Prerequisite: RRM 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 450 Leadership in the Hospitality Industry  Credits: 3 (3-0-0)
Course Description: Exploration of leadership skills, their relationship to ethics through self-analysis, and leading change in the hospitality industry.
Prerequisite: RRM 310 and MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 460 Event and Conference Planning  Credits: 3 (3-0-0)
Also Offered As: NRRT 460.
Course Description: Foundation in planning, organizing, and producing special events and conferences. Functions and strategies for effective event management.
Prerequisite: NRRT 270 or RRM 101.
Registration Information: Credit not allowed for both RRM 460 and NRRT 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 475 Internship: Hospitality Management  Credits: 3 (0-0-9)
Course Description: Prerequisite: RRM 200 and RRM 311, may be taken concurrently.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 492 Seminar on Hospitality Management  Credits: 3 (0-0-3)
Course Description: Applying and synthesizing service knowledge and management functions; project discussions, benchmark presentations, execution of a capstone project.
Prerequisite: MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

RRM 500 Foodservice Management  Credits: 3 (3-0-0)
Course Description: Role of food in the creation of identity, as a driver of technology, and the prominent role food plays in the media.
Prerequisite: RRM 400.
Registration Information: RRM 400 or admission to the GPIdea M.S. in Dietetics program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 510 Foodservice Management  Credits: 2 (1-0-1)
Course Description: Analysis of a wide variety of foodservice operations, including procurement, forecasting, operational design, and menu planning.
Prerequisite: NRRT 402 or NRRT 471.
Registration Information: This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
RRM 520 Lodging Management Credits: 2 (1-0-1)
Course Description: Operating standards and practices essential to the profitability of a hotel, lodging, and accommodation enterprise.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 604 Research Methods in Food and Nutrition Credits: 3 (3-0-0)
Course Description: Research techniques used in food and nutrition disciplines. Emphasis on design, preparation, and evaluation of research.
Prerequisite: EDRM 606 or STAT 301 or STAT 311.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 686 Practicum-Food Service Management Credit: 1 (0-4-0)
Course Description: Food production, menu planning, nutritional analysis and food costing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Natural Resource Recreation and Tourism, Environmental Communication Concentration

The Environmental Communication concentration has been discontinued and students are no longer being accepted into this program of study. Students interested in this area of study, please see the major in Human Dimensions of Natural Resources.

Environmental Communication develops expertise in communicating with and educating the public in order to enhance enjoyment of natural resources and facilitate informed public participation in the decision making process. The curriculum emphasizes course work in foundations of natural resource management, social science theory and research methodologies, communication theory and techniques, public relations, leadership, and management.

Requirements

Effective Fall 2015

Freshman

Select one group from the following:

Group A:
BZ 110  Principles of Animal Biology (GT-SC2)  3A
BZ 111  Animal Biology Laboratory (GT-SC1)  3A

Group B:
BZ 120  Principles of Plant Biology (GT-SC1)  3A
CO 150  College Composition (GT-CO2)  1A  3
MATH 117  College Algebra in Context I (GT-MA1)  1B  1
MATH 118  College Algebra in Context II (GT-MA1)  1B  1
MATH 124  Logarithmic and Exponential Functions (GT-MA1)  1B  1
SPCM 200  Public Speaking  3A  3
Arts and Humanities  3B  6
Biological and Physical Sciences  3A  3
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<th>Course</th>
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<tr>
<td><strong>Major in Natural Resource Recreation and Tourism, Environmental Communication Concentration</strong></td>
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<td>CO 300 Writing Arguments (GT-CO3)</td>
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<td>CO 301B Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>JTC 300 Professional and Technical Communication (GT-CO3)</td>
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<td>LAND 220/LIFE 220 Fundamentals of Ecology (GT-SC2)</td>
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<td>NR 120A Environmental Conservation (GT-SC2)</td>
<td>3A</td>
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<td>NRRT 231 Principles-Parks/Protected Area Management</td>
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<td>Global and Cultural Awareness</td>
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<td><strong>Summer</strong></td>
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<td>NR 220 Natural Resource Ecology and Measurements</td>
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<td>JTC 412 International Mass Communication</td>
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<td>JTC 413 New Communication Technologies and Society</td>
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<td>JTC 414 Media Effects</td>
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<td>NR 300 Biological Diversity</td>
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<td>NR 320 Natural Resources History and Policy</td>
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<td>NR 365 Environmental Education</td>
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<td>NRRT 360 Group Decision Making in Natural Resources</td>
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<td>NR 387 Internship I</td>
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<td>NRRT 330 Social Aspects of Natural Resource Management</td>
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<td>NRRT 361 Natural Resources and the Media</td>
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<td>NRRT 376 Human Dimensions Research and Analysis</td>
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<td>Select one course from the following:</td>
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<td>SPCM 332 Interpersonal Communication Skills</td>
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<td>SPCM 342 Critical Media Studies</td>
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<td>NR 460 Wilderness Management</td>
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<td>NRRT 331 Management of Parks and Protected Areas</td>
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<td>NRRT 362 Environmental Conflict Management</td>
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<td>NRRT 440 Applications in Environmental Communication</td>
<td>4B,4C</td>
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<tr>
<td>NRRT 463 Non-Profit Administration in Conservation</td>
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<td>NRRT 487 Internship</td>
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PHIL 345 Environmental Ethics 3
Guided Natural Resource Electives 2 6
Electives 4-5

Total Credits 30-31

Program Total Credits: 120

1  With advisor’s approval, select from lists of courses available in the department.
2  With advisor’s approval, select upper-division (300- to 400-level) courses from list of courses available in the department.

Major Completion Map

Freshman

Semester 1

Select one group from the following:

Group A:
- BZ 110 Principles of Animal Biology (GT-SC2) 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) 3A

Group B:
- BZ 120 Principles of Plant Biology (GT-SC1) 3A
- CO 150 College Composition (GT-CO2) X 1A
- MATH 117 College Algebra in Context I (GT-MA1) X 1B
- MATH 118 College Algebra in Context II (GT-MA1) X 1B
- MATH 124 Logarithmic and Exponential Functions (GT-MA1) X 1B

Arts and Humanities 3B
Elective 2

Total Credits 15

Semester 2

SPCM 200 Public Speaking 3
Arts and Humanities 3B
Biological and Physical Sciences 3A
Social and Behavioral Sciences 3C
Elective 3

CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2. X

Total Credits 15

Sophomore

Semester 3

LAND 220/LIFE 220 Fundamentals of Ecology (GT-SC2) X 3A

Select one course from the following:
- NR 120A Environmental Conservation (GT-SC2) 3A
- NR 120B Environmental Conservation
- NRRT 231 Principles-Parks/Protected Area Management X
- NRRT 262 Principles of Environmental Communication X

Guided Natural Resources Elective

Total Credits 15

Semester 4

Select one course from the following:
- CO 300 Writing Arguments (GT-CO3) 2
- CO 301B Writing in the Disciplines: Sciences (GT-CO3) 2
- JTC 300 Professional and Technical Communication (GT-CO3) 2
- STAT 201 General Statistics

Global and Cultural Awareness 3E

Total Credits 15
### Guided Natural Resources Elective

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<td>NR 220</td>
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Total Credits: 12

### Junior

#### Semester 6

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<td>NR 387</td>
<td>Internship I</td>
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<tr>
<td>NRRT 376</td>
<td>Human Dimensions Research and Analysis</td>
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Select one course from the following:

- JTC 411 Media Ethics and Issues
- JTC 412 International Mass Communication
- JTC 413 New Communication Technologies and Society
- JTC 414 Media Effects

Select one course from the following:

- NR 365 Environmental Education
- NRRT 360 Group Decision Making in Natural Resources

Total Credits: 12

### Guided Natural Resources Elective

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Total Credits: 3

### Senior

#### Semester 8

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<td>NRRT 362</td>
<td>Environmental Conflict Management</td>
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<td>PHIL 345</td>
<td>Environmental Ethics</td>
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Guided Natural Resources Electives

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<td>SPCM 300</td>
<td>Advanced Public Speaking</td>
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</tr>
<tr>
<td>SPCM 332</td>
<td>Interpersonal Communication Skills</td>
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<td>SPCM 342</td>
<td>Critical Media Studies</td>
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Total Credits: 12

#### Semester 9

Select one course from the following:

- NR 460 Wilderness Management
- NRRT 331 Management of Parks and Protected Areas
- NRRT 440 Applications in Environmental Communication
- NRRT 463 Non-Profit Administration in Conservation
- NRRT 487 Internship

The benchmark courses for the 9th semester are the remaining courses in the entire program of study.

Total Credits: 14

Program Total Credits: 120
Major in Natural Resource Recreation and Tourism, Parks and Protected Area Management Concentration

The Parks and Protected Area Management concentration has been discontinued and students are no longer being accepted into this program of study. If you are interested in this area of study, please see the major in Human Dimensions of Natural Resources.

Parks and Protected Area Management graduates develop expertise in inventorying, planning, and managing public lands and waters, and providing quality outdoor recreational experiences to their visitors. The concentration is oriented to employment with government agencies and non-governmental organizations from the federal to local levels, including local open space and natural area programs. The department works closely with federal and Colorado resource management agencies and nonprofit land management organizations. The department works internationally with several Latin American countries as establishment of parks and outdoor recreation programs has become a worldwide trend. The curriculum emphasizes natural resource management and recreation with supporting courses in the social sciences, natural sciences, and communications.

Requirements

Effective Fall 2015

Freshman

Select one group from the following:

Group A:
BZ 110 Principles of Animal Biology (GT-SC2) 3A
BZ 111 Animal Biology Laboratory (GT-SC1) 3A

Group B:
BZ 120 Principles of Plant Biology (GT-SC1) 3A
CO 150 College Composition (GT-CO2) 1A 3
ECON 202 Principles of Microeconomics (GT-SS1) 3C 3

Select one course from the following:

GEOL 120 Exploring Earth: Physical Geology (GT-SC2) 3A
GEOL 122 The Blue Planet: Geology of Our Environment (GT-SC2) 3A
GEOL 124 Geology of Natural Resources (GT-SC2) 3A
MATH 117 College Algebra in Context I (GT-MA1) 1B 1
MATH 118 College Algebra in Context II (GT-MA1) 1B 1
MATH 124 Logarithmic and Exponential Functions (GT-MA1) 1B 1
PSY 100 General Psychology (GT-SS3) 3C 3
SPCM 200 Public Speaking 3
Arts and Humanities 3B 6
Guided elective 3

Total Credits 31

Sophomore

FW 104 Wildlife Ecology and Conservation (GT-SC2) 3A 3
LAND 220/LIFE 220 Fundamentals of Ecology (GT-SC2) 3A 3
NRRT 231 Principles-Parks/Protected Area Management 3
NRRT 262 Principles of Environmental Communication 3
NRRT 270 Principles of Natural Resource Tourism 3
STAT 201 General Statistics 3
Global and Cultural Awareness 3E 3
Guided electives 5

Total Credits 26

Summer

NR 220 Natural Resource Ecology and Measurements 5

Total Credits 5
### Junior

Select one course from the following:

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<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301A</td>
<td>Writing in the Disciplines: Arts and Humanities (GT-CO3)</td>
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<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>CO 301C</td>
<td>Writing in the Disciplines: Social Sciences (GT-CO3)</td>
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<tr>
<td>CO 301D</td>
<td>Writing in the Disciplines: Education (GT-CO3)</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>NR 300</td>
<td>Biological Diversity</td>
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<tr>
<td>NR 320</td>
<td>Natural Resources History and Policy</td>
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<tr>
<td>NR 387</td>
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<tr>
<td>NRRT 330</td>
<td>Social Aspects of Natural Resource Management</td>
<td>4A</td>
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<tr>
<td>NRRT 376</td>
<td>Human Dimensions Research and Analysis</td>
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Select one course from the following:

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<tr>
<td>PHIL 330/AGRI 330</td>
<td>Agricultural and Food System Ethics</td>
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<td>PHIL 345</td>
<td>Environmental Ethics</td>
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Guided electives\(^1\)

Total Credits: 10

### Senior

Select one course from the following:

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<tr>
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<td>Environmental Education</td>
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<tr>
<td>NRRT 371</td>
<td>Techniques in Interpretation</td>
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<td>NRRT 462</td>
<td>Environmental Communication-Natural Resources</td>
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<tr>
<td>NR 440</td>
<td>Applications in Conservation Planning</td>
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Select one course from the following:

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<tr>
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<tr>
<td>NR 460 or NRRT 439</td>
<td>Wilderness Management, Open Space and Natural Area Management</td>
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<tr>
<td>NRRT 439</td>
<td>Open Space and Natural Area Management</td>
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<td>NRRT 431</td>
<td>Protected Areas, Working Lands, Livelihoods 4B,4C</td>
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<tr>
<td>NRRT 441</td>
<td>Spatial Analysis of Protected Areas</td>
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<tr>
<td>NRRT 487</td>
<td>Internship</td>
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Electives\(^2\)

Total Credits: 9

Total Credits: 29

Program Total Credits: 120

---

1. Select from department list of approved courses.

2. Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). At least 3 of the elective credits must be upper-division.

---

### Major Completion Map

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<tr>
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<td>Group A:</td>
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<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
<td>3A</td>
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<td>BZ 111</td>
<td>Animal Biology Laboratory (GT-SC1)</td>
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<td>Principles of Plant Biology (GT-SC1)</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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### Semester 1

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<tr>
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<td>College Algebra in Context I (GT-MA1)</td>
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<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
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**Arts and Humanities**

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**Guided Electives**

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**Total Credits**

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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td>3C</td>
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**Select one course from the following:**

- GEOL 120  Exploring Earth: Physical Geology (GT-SC2)  
- GEOL 122  The Blue Planet: Geology of Our Environment (GT-SC2)  
- GEOL 124  Geology of Natural Resources (GT-SC2)

**Arts and Humanities**

<table>
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<tr>
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**CO 150 and AUCC 1B (MATH) must be completed by the end of Semester 2.**

**Total Credits**

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### Sophomore

#### Semester 3

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<tr>
<td>LAND 220/</td>
<td>Fundamentals of Ecology (GT-SC2)</td>
<td>3A</td>
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<td>LIFE 220</td>
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<td>NRRT 231</td>
<td>Principles-Parks/Protected Area Management</td>
<td>X</td>
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<td>NRRT 262</td>
<td>Principles of Environmental Communication</td>
<td>X</td>
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<tr>
<td>NRRT 270</td>
<td>Principles of Natural Resource Tourism</td>
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**Guided Electives**

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**Total Credits**

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### Semester 4

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<tr>
<td>FW 104</td>
<td>Wildlife Ecology and Conservation (GT-SC2)</td>
<td>3A</td>
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<td>STAT 201</td>
<td>General Statistics</td>
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**Global and Cultural Awareness**

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**Guided Electives**

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**Total Credits**

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### Semester 5

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<tr>
<td>NR 220</td>
<td>Natural Resource Ecology and Measurements</td>
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**Total Credits**

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### Junior

#### Semester 6

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<td>Natural Resources History and Policy</td>
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<td>NR 387</td>
<td>Internship I</td>
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<td>NRRT 330</td>
<td>Social Aspects of Natural Resource Management</td>
<td>X</td>
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<td>3</td>
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<td>NRRT 376</td>
<td>Human Dimensions Research and Analysis</td>
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**Select one course from the following:**

- CO 300  Writing Arguments (GT-CO3)  
- CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3)  
- CO 301B Writing in the Disciplines: Sciences (GT-CO3)  
- CO 301C Writing in the Disciplines: Social Sciences (GT-CO3)  
- CO 301D Writing in the Disciplines: Education (GT-CO3)  
- JTC 300 Professional and Technical Communication (GT-CO3)

**Guided Elective**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Critical</th>
<th>Recommended</th>
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**Total Credits**

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### Semester 7

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<tbody>
<tr>
<td>NR 300</td>
<td>Biological Diversity</td>
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**Total Credits**

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</table>
Select one course from the following:  
PHIL 330/ AGRI 330  
PHIL 345  
Guided Electives  

Total Credits  

Senior  

Semester 8  

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<th>AUCC</th>
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</table>
| NR 440  
Applications in Conservation Planning | 3       | X        |             |      |

Select one course from the following:  

NR 365  
NRRT 371  
NRRT 462  

Electives  

Total Credits  

Semester 9  

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<th>AUCC</th>
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| NR 460  
Wilderness Management | 3       | X        |             |      |
| NR 439  
Open Space and Natural Area Management |         |       |             |      |
| NRRT 431  
Protected Areas, Working Lands, Livelihoods | 3       | X        | 4B,4C       |      |
| NRRT 441  
Spatial Analysis of Protected Areas | 3       | X        |             |      |
| NRRT 487  
Internship | 5       | X        |             |      |

The benchmark courses for the 9th semester are the remaining courses in the entire program of study.  

Total Credits  

Program Total Credits: 120

Master of Science in Conservation Leadership, Plan A  

Requirements  

Effective Fall 2012  

First Year  

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<th>AUCC</th>
</tr>
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</table>
| NR 540A  
Environmental Issues: Water Resources | 2       |          |             |      |
| NR 540B  
Environmental Issues: Biological Diversity | 2       |          |             |      |
| NR 540C  
Environmental Issues: Ecologic Reconciliation | 2       |          |             |      |
| NR 540D  
Environmental Issues: Ecosystem Services | 2       |          |             |      |
| NR 541  
Conservation Policy, Finance, and Governance | 2       |          |             |      |
| NR 542  
Global Change and Conservation | 2       |          |             |      |
| NR 543A  
Catalyzing Change: Conflict and Conservation | 2       |          |             |      |
| NR 543B  
Catalyzing Change: Collaborative Conservation | 2       |          |             |      |
| NR 544A  
Conservation Methods: Watershed Sciences | 1       |          |             |      |
| NR 544B  
Conservation Methods: Ecological Sciences | 1       |          |             |      |
| NR 544C  
Conservation Methods: Social Sciences | 1       |          |             |      |
| NR 544D  
Conservation Methods: Spatial Information | 1       |          |             |      |
| NR 544E  
Conservation Methods: Integrative Field Work | 2-4     |          |             |      |
| NR 545A or 545B  
| NR 549A  
Conservation and Systems Leadership | Var.    |          |             |      |

Total Credits 26-32

Second Year  

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</table>
| NR 546A or 546B  
Socioecological Context: Mexico Socioecological Context: Global | 2       |          |             |      |
| NR 547  
Poverty and Sustainable Development | 2       |          |             |      |
Master of Science in Conservation Leadership, Plan B

Requirements

Effective Fall 2012

First Year

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<td>Environmental Issues: Biological Diversity</td>
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<td>NR 544D</td>
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<td>Conservation Methods: Integrative Field Work</td>
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Second Year

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<tr>
<td>NR 540B</td>
<td>Conservation Planning and Management: Global</td>
<td>2</td>
</tr>
<tr>
<td>NR 540C</td>
<td>Conservation and Systems Leadership: Field</td>
<td>Var.</td>
</tr>
<tr>
<td>NR 546A</td>
<td>Socioecological Context: Mexico</td>
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</tr>
<tr>
<td>NR 546B</td>
<td>Socioecological Context: Global</td>
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</tr>
<tr>
<td>NR 547</td>
<td>Poverty and Sustainable Development</td>
<td>2</td>
</tr>
<tr>
<td>NR 549A</td>
<td>Conservation Planning and Management: Mexico</td>
<td>2</td>
</tr>
<tr>
<td>NR 549B</td>
<td>Conservation Planning and Management: Global</td>
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<tr>
<td>NRRT 698</td>
<td>Research</td>
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</tbody>
</table>

Program Total Credits: 36-44

A minimum of 36 credits are required to complete this program.

Master of Science in Human Dimensions of Natural Resources, Plan A

Requirements

Effective Fall 2005

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tr>
<td>NRRT 565</td>
<td>Research-Human Dimensions Natural Resources</td>
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<td>NRRT 605</td>
<td>Human Dimensions of Natural Resources Theory</td>
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<td>NRRT 665</td>
<td>Survey Research and Analysis</td>
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<tr>
<td></td>
<td>NRRT 765 Applied Multivariate Analysis</td>
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<td>Qualitative Methods Course</td>
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<tr>
<td></td>
<td>Statistics (300-level or higher)</td>
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<tr>
<td></td>
<td>Electives</td>
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</table>

A minimum of 35 credits are required to complete this program.
1 Or qualitative methods course.

Master of Tourism Management, Plan C (M.T.M)

Requirements
Effective Spring 2016

<table>
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<th>Code</th>
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<td>NRRT 523</td>
<td>Strategic Ski Area Marketing and Management</td>
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<td>NRRT 655</td>
<td>Tourism Marketing Concepts and Applications</td>
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<td>Select one of the following:</td>
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<tr>
<td>NRRT 524</td>
<td>Ski Area Finance and Investment</td>
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<td>NRRT 650</td>
<td>Financial Management in Tourism</td>
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<td>NRRT 600</td>
<td>Tourism Industry Concepts and Practices</td>
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<td>NRRT 601</td>
<td>Tourism Quantitative Analysis I</td>
<td>2</td>
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<tr>
<td>NRRT 602</td>
<td>Tourism Quantitative Analysis II</td>
<td>2</td>
</tr>
<tr>
<td>NRRT 610</td>
<td>Natural Resource Management and Tourism</td>
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<td>NRRT 615</td>
<td>Sustainable Tourism Development Foundation</td>
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<td>NRRT 620</td>
<td>Organizational Management in Tourism</td>
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<tr>
<td>NRRT 625</td>
<td>Communication/Conflict Management in Tourism</td>
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<td>NRRT 660</td>
<td>Law and Legal Liability in Tourism 1</td>
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<td>NRRT 662</td>
<td>Global Tourism Policy</td>
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<td>NRRT 671</td>
<td>Strategic Management for Travel and Tourism</td>
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<td>NRRT 679A</td>
<td>Current Topics in Nature Based Tourism 1</td>
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</tr>
<tr>
<td>NRRT 679B</td>
<td>Current Topics in Nature Based Tourism 1</td>
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<td>Directed Electives</td>
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<tr>
<td>Total Credits</td>
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<td>30-32</td>
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</table>

A minimum of 30-32 credits are required to complete this program.

1 Memorandum of Understanding (MOU) with international universities may identify culturally specific course substitutions and total credits.
2 Select a minimum of 4 credits of directed electives approved by advisor. For those international students enrolled in this program, the number of directed electives credits (approved by the advisor) is to be consistent with the MOU with the cooperating international university.
3 Directed electives may be used toward a certificate with approval of advisor. The number of directed electives that satisfy the Master of Tourism Management and a graduate certificate may be limited by advisor.

College of Natural Sciences

Office in Statistics Building, Room 117
(970) 491-1300
natsci.colostate.edu (http://www.natsci.colostate.edu)

Professor Janice Nerger, Dean
Professor James Sites, Senior Associate Dean for Research
Professor Simon Tavener, Associate Dean for Academics
Dr. Lisa Dysleski, Assistant Dean of Undergraduate Programs

Undergraduate Majors
• Applied Computing Technology
• Biochemistry
• Biological Science
• Chemistry
• Computer Science
• Mathematics
• Natural Sciences
• Neuroscience
• Physics
• Psychology
• Statistics
• Zoology

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

Undergraduate Minors
• Applied Statistics
• Biochemistry
• Botany
• Chemistry
• Computer Science
• Mathematics
• Mathematical Biology
• Physics
• Statistics
• Zoology
• Zoology

For a complete list of departmental program offerings (including certificates), see individual department catalog pages.

College-Wide Graduate Programs
Master’s Programs
• Master of Natural Sciences Education, Plan C
• Professional Science Master’s in Natural Science – Zoo, Aquarium and Animal Shelter Management Specialization

College Programs
Our goal is to provide an extraordinary education to students in order to prepare them for science careers in industry, modern research and academia. In addition, the College of Natural Sciences provides foundational courses in the biological, mathematical, behavioral, and physical sciences for CSU’s seven other colleges, supporting CSU’s broad liberal arts and general education objectives.

Undergraduate Majors
The college’s eight departments offer twelve undergraduate majors, all leading to a Bachelor of Science degree which requires a minimum of 120 credits including 42 or more credits in upper-division courses. The undergraduate major in Neuroscience is offered jointly with the College of Veterinary Medicine and Biomedical Sciences.

A major should be chosen based with both educational and career objectives in mind. Students earning degrees in College of Natural Sciences majors will be well prepared to succeed in careers in biochemistry, biology, chemistry, computer science, mathematics, physics, and statistics, including middle/high school science and math instruction. Students who plan to enter a human- or animal-health profession must formally declare an academic major. There is no specific premedical, pre-veterinary, etc. major at CSU because health profession programs do not require a specific major, only specific courses. Majors such as Biological Sciences, Biochemistry, Chemistry, Psychology and Zoology are popular for students interested in a career in the health professions.

All College of Natural Sciences students have the ability to work with an academic advisor to plan the coursework necessary to graduate from CSU. The College of Natural Sciences also provides students with the opportunity to seek specialized career counseling through a satellite office of the CSU Career Center housed in the Statistics building. Our services are offered to all Natural Science students and alumni in all aspects of their career development. Additionally, pre-health professions advisors are located at the Center for Advising and Student Achievement (http://www.casa.colostate.edu) (CASA), in The Institute for Learning and Teaching (TILT) building, Room 121.

The college provides multiple opportunities for students to become engaged outside the classroom, including the Student Ambassadors program, Student Leaders in Science, the College of Natural Sciences Learning Community (a residential learning community), and undergraduate research opportunities.

Education Abroad
Education abroad programs are available to all students in the College of Natural Sciences. Because the knowledge of another culture is valuable in understanding one’s own, students are strongly encouraged to participate in at least one educational experience outside of the United States as part of their overall program at CSU. Students interested in education abroad should plan, well in advance, by discussing opportunities with their academic advisor and by visiting the Education Abroad Office through the Office of International Programs (http://educationabroad.colostate.edu). The Education Abroad office offers information about credit and non-credit opportunities (service-learning/volunteer, research, internships), as well as support prior to and during travel, information about scholarships and financial aid, and resources for diverse populations (including adult learners & veterans, multicultural students and students with disabilities).

Graduate Programs
Faculty and graduate students in the College of Natural Sciences are engaged in cutting-edge research in multiple disciplines and the college is proud of the graduate student education it provides. Master of Science and Doctor of Philosophy degrees are offered by all departments and a Master of Natural Sciences Education is offered through the college. The college also offers a Professional Science Master’s in Natural Sciences with a specialization in Zoo, Aquarium and Animal Shelters. For detailed information about graduate degree programs consult the appropriate department and see the Graduate and Professional Bulletin.

Major in Natural Sciences
The Bachelor of Science in Natural Sciences meets the needs of two audiences:

• Students who want to become high school or junior high/middle school science teachers.
• Students who want a broad exposure to mathematics and the physical sciences, rather than specialization in one discipline.

Learning Outcomes
Students will demonstrate:

• Skills to critically interpret scientific data.
• Logical and critical thinking.
• Analysis and solving of complex problems.
• Strong written and oral communication skills.

Potential Occupations
Graduates with licensure in secondary science education will find a strong demand for high school and junior high/middle school teachers in Colorado and elsewhere in the nation. In addition, these graduates will also have the background required for graduate science education programs.

With proper planning, physical science graduates can meet requirements for professional schools (e.g., medicine or law) or graduate programs in the basic or applied sciences. Internships and volunteer activities can provide practical training and experience.

Secondary Education
The Bachelor of Science in Natural Sciences degree provides the subject matter, the education classes, and the classroom experience required for secondary science education licensure in Colorado.

Concentrations in the Natural Sciences major include: Biology Education, Chemistry Education, Geology Education, and Physics Education.

The program includes science courses in a concentration such as Biology, Geology, Physics, Chemistry; the All-University Core Curriculum and professional classes in the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) program in the College of Health and Human Sciences. In addition, the CEP program helps schedule classroom visits and practica. The experience culminates in a semester of student teaching under the supervision of a master teacher.
Concentrations

- Biology Education Concentration
- Chemistry Education Concentration
- Geology Education Concentration
- Physical Science Concentration
- Physics Education Concentration

Major in Natural Sciences, Biology Education Concentration

Requirements

Effective Fall 2015

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
<td>1</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>LIFE 205</td>
<td>Microbial Biology</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>MATH 155 or</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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</table>

Arts and Humanities 3B 3

Global and Cultural Awareness 3E 3

Total Credits 31

**Sophomore**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>BZ 220</td>
<td>Introduction to Evolution</td>
<td></td>
<td>3</td>
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<tr>
<td>BZ 350 or SOCR 330</td>
<td>Molecular and General Genetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Select one group from the following:

Group A:
- PH 121 General Physics I (GT-SC1) 3A
- PH 122 General Physics II (GT-SC1) 3A

Group B:
- PH 141 Physics for Scientists and Engineers I (GT-SC1) 3A
- PH 142 Physics for Scientists and Engineers II (GT-SC1) 3A

STAT 301 Introduction to Statistical Methods 3

Science Elective 3

Total Credits 30-31

**Junior**

Select one group from the following:

Group A:
- AA 100 Introduction to Astronomy (GT-SC2) 3A
- AA 101 Astronomy Laboratory (GT-SC1) 3A

Group B:
- GEOL 120 Exploring Earth: Physical Geology (GT-SC2) 3A
- GEOL 121 Introductory Geology Laboratory (GT-SC1) 3A

BZ 310 Cell Biology 4

BZ 311 Developmental Biology 4
EDUC 275  Schooling in the United States (GT-SS3)  3C  3
EDUC 331  Educational Technology and Assessment  2
EDUC 340  Literacy and the Learner  3
EDUC 350  Instruction I-Individualization/Management  3
EDUC 386  Practicum-Instruction I  1
Advanced Writing  2  3
Historical Perspectives  3D  3
Science Elective  3

Total Credits  33

Senior

BMS 300  Principles of Human Physiology  4
EDUC 450  Instruction II-Standards and Assessment  4
EDUC 460  Methods and Materials in Teaching Science  4
EDUC 485B  Student Teaching: Secondary  4A,4B,4C  11
EDUC 486E  Practicum: Instruction II  1
EDUC 493A  Seminar: Professional Relations  4C  1
Arts and Humanities  3B  3

Total Credits  28

Program Total Credits:  122-123

1 Select course(s) in consultation with advisor.

Major Completion Map

Distinctive Requirements for Degree Program:
All Biology Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All course work must be completed prior to Student Teaching (AUCC 4A/4B/4C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

Freshman

Semester 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>1</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
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<tr>
<td>MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.</td>
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Total Credits 15

Semester 2

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<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
<td>X</td>
<td></td>
<td>4</td>
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<tr>
<td>LIFE 205</td>
<td>Microbial Biology</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LIFE 206</td>
<td>Microbial Biology Laboratory</td>
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<td></td>
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<td>Select one course from the following:</td>
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<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td>1B</td>
<td></td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>X</td>
<td>1B</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
<td>3E</td>
<td>3</td>
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<tr>
<td>LIFE 102 must be completed by the end of Semester 2.</td>
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<td>X</td>
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<tr>
<td>MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.</td>
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Total Credits 16
## Sophomore

### Semester 3

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<td>CHEM 245</td>
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<tr>
<td>CHEM 246</td>
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Select one course from the following:

<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
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<tbody>
<tr>
<td>PH 121</td>
<td>X</td>
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<tr>
<td>PH 141</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>STAT 301</td>
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CHEM 107 and CHEM 108 must be completed by the end of Semester 3.

Total Credits: 16

### Semester 4

Select one course from the following:

<table>
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<td>BZ 350</td>
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<td>SOCR 330</td>
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<tr>
<td>LIFE 320</td>
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Select one course from the following:

<table>
<thead>
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<th>Course</th>
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<tbody>
<tr>
<td>PH 122</td>
<td>X</td>
</tr>
<tr>
<td>PH 142</td>
<td>X</td>
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</table>

Mathematics or Science Elective

CO 150 and MATH 155 or MATH 160 must be completed by the end of Semester 4.

Total Credits: 14-15

## Junior

### Semester 5

Select one group from the following:

<table>
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<tbody>
<tr>
<td>Group A:</td>
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<tr>
<td>AA 100</td>
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<td>AA 101</td>
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<tr>
<td>Group B:</td>
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</tr>
<tr>
<td>GEOL 120</td>
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</tr>
<tr>
<td>GEOL 121</td>
<td></td>
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<tr>
<td>BZ 310</td>
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</tr>
<tr>
<td>EDUC 275</td>
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</tr>
<tr>
<td>EDUC 340</td>
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<td>Advanced Writing</td>
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Total Credits: 17

### Semester 6

<table>
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<tbody>
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<td>BZ 311</td>
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<tr>
<td>EDUC 331</td>
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<tr>
<td>EDUC 350</td>
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<tr>
<td>EDUC 386</td>
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</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
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<tr>
<td>Science Elective</td>
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</table>

BZ 310 must be completed by the end of Semester 6.

Total Credits: 16

## Senior

### Semester 7

<table>
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<th>Course</th>
<th>Critical</th>
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<tbody>
<tr>
<td>BMS 300</td>
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<tr>
<td>EDUC 450</td>
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</tr>
<tr>
<td>EDUC 460</td>
<td></td>
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<tr>
<td>EDUC 486E</td>
<td>X</td>
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</table>

Total Credits: 16
**Major in Natural Sciences, Chemistry Education Concentration**

**Requirements**

### Effective Fall 2015

#### Freshman

- **CHEM 111** General Chemistry I (GT-SC2)  
  AUCC Credits: 3A 4
- **CHEM 112** General Chemistry Lab I (GT-SC1)  
  AUCC Credits: 3A
- **CHEM 113** General Chemistry II  
  AUCC Credits: 3
- **CHEM 114** General Chemistry Lab II  
  AUCC Credits: 1
- **CO 150** College Composition (GT-CO2)  
  AUCC Credits: 1A 3
- **LIFE 102** Attributes of Living Systems (GT-SC1)  
  AUCC Credits: 3A 4
- **LIFE 103** Biology of Organisms-Animals and Plants  
  AUCC Credits: 4

Select one group from the following:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 155</td>
<td>MATH 160</td>
</tr>
<tr>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
</tr>
</tbody>
</table>

Select one group from the following:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 121</td>
<td>PH 122</td>
</tr>
<tr>
<td>General Physics I (GT-SC1)</td>
<td>General Physics II (GT-SC1)</td>
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</tbody>
</table>

Total Credits: 31

#### Sophomore

- **CHEM 261** Fundamentals of Inorganic Chemistry  
  AUCC Credits: 3

Select one group from the following:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 341</td>
<td>CHEM 345</td>
</tr>
<tr>
<td>Modern Organic Chemistry I</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>CHEM 343</td>
<td>CHEM 344</td>
</tr>
<tr>
<td>Modern Organic Chemistry II</td>
<td>Modern Organic Chemistry Laboratory</td>
</tr>
</tbody>
</table>

Select one group from the following:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 121</td>
<td>PH 122</td>
</tr>
<tr>
<td>General Physics I (GT-SC1)</td>
<td>General Physics II (GT-SC1)</td>
</tr>
</tbody>
</table>

Total Credits: 31
Major in Natural Sciences, Chemistry Education Concentration

PH 142  Physics for Scientists and Engineers II (GT-SC1)  3A
STAT 301  Introduction to Statistical Methods  3
Advanced Writing  2  3
Arts and Humanities  3B  3

Total Credits  30

Junior

Select one group from the following:

Group A:
AA 100  Introduction to Astronomy (GT-SC2)  3A
AA 101  Astronomy Laboratory (GT-SC1)  3A

Group B:
GEOL 120  Exploring Earth: Physical Geology (GT-SC2)  3A
GEOL 121  Introductory Geology Laboratory (GT-SC1)  3A
CHEM 334  Quantitative Analysis Laboratory  1
CHEM 335  Introduction to Analytical Chemistry  3
CHEM 473  Foundations of Physical Chemistry  4
EDUC 275  Schooling in the United States (GT-SS3)  3C  3
EDUC 331  Educational Technology and Assessment  2
EDUC 340  Literacy and the Learner  3
EDUC 350  Instruction I-Individualization/Management  3
EDUC 386  Practicum-Instruction I  1
Science Elective  2
Global and Cultural Awareness  3E  3
Historical Perspectives  3D  3

Total Credits  32

Senior

BC 351  Principles of Biochemistry  4
EDUC 450  Instruction II-Standards and Assessment  4
EDUC 460  Methods and Materials in Teaching Science  4
EDUC 485B  Student Teaching: Secondary  4A,4B,4C  11
EDUC 486E  Practicum: Instruction II  1
EDUC 493A  Seminar: Professional Relations  4C  1
Arts and Humanities  3B  3

Total Credits  28

Program Total Credits:  121

Select course(s) in consultation with advisor.

Major Completion Map

Distinctive Requirements for Degree Program:
All Chemistry Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All Chemistry Education majors are expected to be prepared to take CHEM 111/CHEM 112 their first semester which requires MATH 118. All course work must be completed prior to Student Teaching (AUCC 4A/B/C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
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<tbody>
<tr>
<td>CHEM 111</td>
<td></td>
<td>X 3A</td>
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<tr>
<td>CHEM 112</td>
<td></td>
<td>X 3A</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>CO 150</td>
<td></td>
<td>1A</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>LIFE 102</td>
<td></td>
<td>X 3A</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>
Select one course from the following:

- MATH 155  Calculus for Biological Scientists I (GT-MA1)  X  1B
- MATH 160  Calculus for Physical Scientists I (GT-MA1)  X  1B

MATH 117, MATH 118 may be necessary for some students to fulfill prerequisite requirements.

<table>
<thead>
<tr>
<th>Semester 2</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>X</td>
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<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
<td>X</td>
<td></td>
<td>1</td>
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<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
<td>X</td>
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<td>Select one course from the following:</td>
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<tr>
<td>MATH 255</td>
<td>Calculus for Biological Scientists II (GT-MA1)</td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<td>Science Elective</td>
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<tr>
<td>CHEM 111, CHEM 112, CO 150 must be completed by the end of Semester 2.</td>
<td>X</td>
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<tr>
<td>MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.</td>
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Total Credits 16

<table>
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<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>X</td>
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<td>CHEM 345</td>
<td>Organic Chemistry I</td>
<td>X</td>
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<td>Select one course from the following:</td>
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<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<td>3A</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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<td>3A</td>
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<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>CHEM 113, CHEM 114, MATH 155 or MATH 160 must be completed by the end of Semester 3.</td>
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Total Credits 15

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<th>Semester 4</th>
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<tbody>
<tr>
<td>CHEM 261</td>
<td>Fundamentals of Inorganic Chemistry</td>
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<td>Select one group from the following:</td>
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<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>X</td>
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<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
<td>X</td>
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<tr>
<td>Group B:</td>
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<tr>
<td>CHEM 346</td>
<td>Organic Chemistry II</td>
<td>X</td>
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<td>Select one course from the following:</td>
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<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
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<td>3A</td>
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<td>Advanced Writing</td>
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<td>MATH 161 or MATH 255 and PH 121 or PH 141 must be completed by the end of Semester 4.</td>
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Total Credits 15-16

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<th>Semester 5</th>
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<th>AUCC</th>
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<tr>
<td>Group A:</td>
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<tr>
<td>AA 100</td>
<td>Introduction to Astronomy (GT-SC2)</td>
<td></td>
<td>3A</td>
<td></td>
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<tr>
<td>AA 101</td>
<td>Astronomy Laboratory (GT-SC1)</td>
<td></td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>Group B:</td>
<td></td>
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</tbody>
</table>
GM 120 Exploring Earth: Physical Geology (GT-SC2) 3A
GEOL 121 Introductory Geology Laboratory (GT-SC1) 3A
CHEM 334 Quantitative Analysis Laboratory X 1
CHEM 335 Introduction to Analytical Chemistry X 3
EDUC 275 Schooling in the United States (GT-SS3) X 3C 3
EDUC 340 Literacy and the Learner X 3
Historical Perspectives 3D 3
CHEM 341 or CHEM 345 and PH 122 or PH 142 must be completed by the end of Semester 5.

<table>
<thead>
<tr>
<th>Semester 6</th>
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<tbody>
<tr>
<td>CHEM 473</td>
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<td>EDUC 331</td>
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<td>EDUC 350</td>
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<td>X</td>
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<td>EDUC 386</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
<td>3E</td>
<td>3</td>
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<tr>
<td>Science Elective</td>
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<td>CHEM 261 and LIFE 102 must be completed by the end of Semester 6.</td>
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| Total Credits | 17 |

Senior

<table>
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<tr>
<th>Semester 7</th>
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<tbody>
<tr>
<td>BC 351</td>
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<tr>
<td>EDUC 450</td>
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<td>X</td>
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<tr>
<td>EDUC 460</td>
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<td>X</td>
<td></td>
<td>4</td>
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<tr>
<td>EDUC 486E</td>
<td></td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 334, CHEM 335 and CHEM 343/CHEM 344 or CHEM 346 must be completed by the end of Semester 7.</td>
<td></td>
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| Total Credits | 15 |

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<tr>
<th>Semester 8</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDUC 485B</td>
<td></td>
<td>X</td>
<td>4A,4B,4C</td>
<td>11</td>
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<tr>
<td>EDUC 493A</td>
<td></td>
<td>X</td>
<td>4C</td>
<td>1</td>
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</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

| Total Credits | 12 |

Program Total Credits: 121

Major in Natural Sciences, Geology Education Concentration Requirements

Effective Fall 2015

Freshman

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AA 100</td>
<td>Introduction to Astronomy (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>NR 150</td>
<td>Oceanography (GT-SC2)</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
<td>4</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
<td>1</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
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</tbody>
</table>
Select one group from the following:  

Group A:  
GEOL 120 Exploring Earth: Physical Geology (GT-SC2) 3A  
GEOL 121 Introductory Geology Laboratory (GT-SC1) 3A  

Group B:  
GEOL 150 Physical Geology for Scientists and Engineers  
GEOL 154 Historical and Analytical Geology 4  
LIFE 102 Attributes of Living Systems (GT-SC1) 3A 4  

Select one from the following:  

MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B  
MATH 160 Calculus for Physical Scientists I (GT-MA1) 1B  
LIFE 102 Attributes of Living Systems (GT-SC1) 3A 4  
Arts and Humanities 3B 3  

Total Credits 30  

Sophomore  

CHEM 113 General Chemistry II 3  
CHEM 114 General Chemistry Lab II 1  
EDUC 275 Schooling in the United States (GT-SS3) 3C 3  
EDUC 340 Literacy and the Learner 3  
GEOL 232 Mineralogy 3  
LIFE 103 Biology of Organisms-Animals and Plants 4  
Select one from the following:  

MATH 161 Calculus for Physical Scientists II (GT-MA1) 1B  
MATH 255 Calculus for Biological Scientists II (GT-MA1) 1B  
STAT 301 Introduction to Statistical Methods 3  
Science Elective 1  3  
Advanced Writing 2 3  
Historical Perspectives 3D 3  

Total Credits 33  

Junior  

EDUC 331 Educational Technology and Assessment 2  
EDUC 350 Instruction I-Individualization/Management 3  
EDUC 386 Practicum-Instruction I 1  
Select two Geology Elective courses from the following:  

GEOL 250 The Solid Earth  
GEOL 342 Paleontology  
GEOL 344 Stratigraphy and Sedimentology  
GEOL 364 Igneous and Metamorphic Petrology  
GEOL 366 Sedimentary Petrology and Geochemistry  
GEOL 372 Structural Geology  
GEOL 446 Environmental Geology  
GEOL 452 Hydrogeology  
GEOL 454 Geomorphology 4  
PH 141 Physics for Scientists and Engineers I (GT-SC1) 3A 5  
PH 142 Physics for Scientists and Engineers II (GT-SC1) 3A 5  
Global and Cultural Awareness 3E 3  

Total Credits 29-31  

Senior  

ATS 350 Introduction to Weather and Climate 2  
EDUC 450 Instruction II-Standards and Assessment 4
**Major in Natural Sciences, Geology Education Concentration**

- **EDUC 460** Methods and Materials in Teaching Science 4
- **EDUC 485B** Student Teaching: Secondary 4A,4B,4C 11
- **EDUC 486E** Practicum: Instruction II 1
- **EDUC 493A** Seminar: Professional Relations 4C 1

Select one Geology Elective course not taken elsewhere from the following: 3-4
- **GEOL 250** The Solid Earth
- **GEOL 342** Paleontology
- **GEOL 344** Stratigraphy and Sedimentology
- **GEOL 364** Igneous and Metamorphic Petrology
- **GEOL 366** Sedimentary Petrology and Geochemistry
- **GEOL 372** Structural Geology
- **GEOL 446** Environmental Geology
- **GEOL 452** Hydrogeology

**Arts and Humanities** 3B 3

| Program Total Credits: | 121-124 |

---

**Select course(s) in consultation with advisor.**

### Major Completion Map

**Distinctive Requirements for Degree Program:**

All Geology Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All course work must be completed prior to Student Teaching (AUCC 4A/4B/4C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>GEOL 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
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<td>GEOL 121</td>
<td>Introductory Geology Laboratory (GT-SC1)</td>
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<td>3A</td>
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<tr>
<td>Group B:</td>
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<td>GEOL 150</td>
<td>Physical Geology for Scientists and Engineers</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>MATH 155</td>
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MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements. X

| Total Credits | 15 |

<table>
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<tr>
<th>Semester 2</th>
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<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>3A</td>
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<td>GEOL 154</td>
<td>Historical and Analytical Geology</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
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<td>GEOL 120/GEOL 121 or GEOL 150</td>
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MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.

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**Sophomore**

**Semester 3**

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**Semester 4**

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| Total Credits | 17       |             |      |         |

**Junior**

**Semester 5**

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<td>GEOL 366</td>
<td>Sedimentary Petrology and Geochemistry</td>
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<td>PH 141</td>
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| Total Credits | 14-15    |             |      |         |

**Semester 6**

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## Major in Natural Sciences, Physics Education Concentration

**Freshman**

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**Arts and Humanities**

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**Historical Perspectives**

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**Total Credits**

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**Effective Fall 2015**

**Senior**

**Semester 7**

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<td>Introduction to Weather and Climate</td>
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<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
<td>X</td>
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<td>EDUC 460</td>
<td>Methods and Materials in Teaching Science</td>
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<td>Practicum: Instruction II</td>
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Select one course from the following:

- GEOL 250 The Solid Earth
- GEOL 342 Paleontology
- GEOL 344 Stratigraphy and Sedimentology
- GEOL 364 Igneous and Metamorphic Petrology
- GEOL 366 Sedimentary Petrology and Geochemistry
- GEOL 372 Structural Geology
- GEOL 446 Environmental Geology
- GEOL 452 Hydrogeology

**Arts and Humanities**

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**Total Credits**

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**Semester 8**

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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

**Total Credits**

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**Program Total Credits**

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**Major in Natural Sciences, Physics Education Concentration Requirements**

**Effective Fall 2015**

**Freshman**

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**Arts and Humanities**

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**Historical Perspectives**

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Sophomore

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Junior

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<td>EDUC 386</td>
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Senior

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1 Select course(s) in consultation with advisor.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
All Physics Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All course work must be completed prior to Student Teaching (AUCC 4A/4B/4C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

**Freshman**

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Historical Perspectives | 3D | 3
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.

<table>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits: 16

Program Total Credits: 121

Major in Natural Sciences, Physical Science Concentration

The Physical Science concentration begins with two semesters each of calculus, chemistry, and physics, plus a semester of biological science. Students then complete the major by earning two minors selected from Biochemistry, Chemistry, Computer Science, Geology, Mathematics, Statistics, or Physics. Completion of the double minor gives an unusual breadth in the physical sciences. Recent graduates have pursued careers in the sciences. Others use this background as a basis for graduate work and research or for entry into medical or veterinary professional programs.

Requirements

Effective Fall 2015

Freshman

CHEM 111 General Chemistry I (GT-SC2) 3A 4
CHEM 112 General Chemistry Lab I (GT-SC1) 3A 1
CO 150 College Composition (GT-CO2) 1A 3

Select one pair of courses from the following:

Group A:
MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B
MATH 255 Calculus for Biological Scientists II (GT-MA1) 1B

Group B:
MATH 160 Calculus for Physical Scientists I (GT-MA1) 1B
MATH 161 Calculus for Physical Scientists II (GT-MA1) 1B

Minor 1 9
Social and Behavioral Sciences 3C 3
Electives 3

Total Credits 31

Sophomore

CHEM 113 General Chemistry II 3
CHEM 114 General Chemistry Lab II 1
PH 141 Physics for Scientists and Engineers I (GT-SC1) 3A 5
PH 142 Physics for Scientists and Engineers II (GT-SC1) 3A 5
STAT 301 Introduction to Statistical Methods 3
Minor 1 8
Electives 3

Total Credits 28

Junior

Select four credits from the following:

Group A:
BZ 104 Basic Concepts of Plant Life (GT-SC2) 3A
BZ 105 Basic Concepts of Plant Life Laboratory (GT-SC1) 3A
Group B:
BZ 110 Principles of Animal Biology (GT-SC2) 3A
BZ 111 Animal Biology Laboratory (GT-SC1) 3A

Group C:
BZ 120 Principles of Plant Biology (GT-SC1) 3A

Group D:
LIFE 102 Attributes of Living Systems (GT-SC1) 3A

Advanced Writing 2 3
Arts and Humanities 3B 3
Global and Cultural Awareness 3E 3
Historical Perspectives 3D 3
Minor 1, 2, 3, 4 15

Total Credits 31

Senior

Arts and Humanities 3B 3
Building Foundations/Perspectives 2 4B 3
Capstone Course 3 4C 3
Using Competencies 4 4A 3
Minor 1, 2, 3, 4 12
Electives 5 6

Total Credits 30

Program Total Credits: 120

1 Declare and complete two minors from the following list: Biochemistry, Chemistry, Computer Science, Geology, Mathematics, Physics, Statistics, Applied Statistics.
2 Complete a 3 credit course satisfying AUCC category 4B that is offered within a major that is the same as one of the minors that will be completed.
3 Complete a 3 credit course satisfying AUCC category 4C that is offered within a major that is the same as one of the minors that will be completed.
4 Complete a 3 credit course satisfying AUCC category 4A that is offered within a major that is the same as one of the minors that will be completed.
5 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- and 400-level).

Major Completion Map

**Freshman**

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MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.

| Total Credits | 16 |

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<td>MATH 255</td>
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<p>| Total Credits | 16 |</p>
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MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.

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**Sophomore**

**Semester 3**

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<td>PH 141</td>
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MATH 155 or MATH 160 must be completed by the end of Semester 3.

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**Junior**

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**Senior**

**Semester 7**

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**Semester 8**

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Department of Biochemistry and Molecular Biology

Office in Molecular and Radiological Biosciences Building, Room 111
(970) 491-5602
bmb.colostate.edu (http://www.bmb.colostate.edu)

Professor P. Shing Ho, Chair
Dr. Aaron Sholders, Undergraduate Program Coordinator
Dr. Brian Kalet, Academic Success Coordinator
Stasi Brazil-Engleman, Undergraduate Program Assistant
Neda Amidon, Graduate Program Assistant

Undergraduate

Majors
- Major in Biochemistry
  - General Biochemistry Concentration
  - Health and Medical Sciences Concentration
  - Pre-Pharmacy Concentration

Minors
- Minor in Biochemistry

Graduate

Graduate Programs in Biochemistry
The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin, and the department’s website (http://www.bmb.colostate.edu/graduates).

Master Programs
- Master of Science in Biochemistry, Plan A*
- Master of Science in Biochemistry, Plan B*

Ph.D.
- Ph.D. in Biochemistry*
* Please see department for program of study.

Courses

Biochemistry and Molecular Biology (BC)

BC 192 Biochemistry Freshman Seminar Credits: 2 (1-0-1)
Course Description: Introduction to curriculum and career options for biochemistry majors.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 295 Introductory Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Apply principles and knowledge being learned in first and second year life sciences and chemistry courses.
Prerequisite: LIFE 102 or CHEM 112, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 351 Principles of Biochemistry Credits: 4 (4-0-0)
Course Description: Structure and function of biological molecules; biocatalysis; metabolism and energy transduction; gene expression.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245 or CHEM 341 or CHEM 345).
Registration Information: For majors in biological sciences, engineering, and preprofessional students in the health sciences. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 353 Pre-Health Genetics Credits: 4 (4-0-0)
Course Description: Applies and extends the biochemical concepts learned in BC 351 to macromolecules and molecular processes based on nucleic acids.
Prerequisite: BC 351.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 401 Comprehensive Biochemistry I Credits: 3 (3-0-0)
Course Description: Macromolecular structure and dynamics; membranes; enzymes; bioenergetics.
Prerequisite: (CHEM 245 or CHEM 343, may be taken concurrently or CHEM 346, may be taken concurrently) and (MATH 155 or MATH 160).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BC 403 Comprehensive Biochemistry II Credits: 3 (3-0-0)
Course Description: Metabolic pathways and their regulation; cellular biochemistry.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 404 Comprehensive Biochemistry Laboratory Credits: 2 (0-6-0)
Course Description: Experimental approaches to studying macromolecules, metabolism, and gene expressions.
Prerequisite: (BC 401, may be taken concurrently) and (CHEM 246 or CHEM 344 or CHEM 346) and (LIFE 212 and LIFE 203).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 405 Comprehensive Biochemistry II--Honors Recitation Credit: 1 (0-0-1)
Course Description: Read and discuss current literature related to material presented in BC 403.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 403. For students participating in the Honors program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BC 411 Physical Biochemistry Credits: 4 (3-0-1)
Course Description: Thermodynamics; reaction rates; quantum chemistry; spectroscopy; macromolecular folding and interactions; ligand binding; enzyme kinetics; membranes.
Prerequisite: (BC 351 with a minimum grade of B or BC 401) and (CHEM 113) and (MATH 161 or MATH 255).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 441 3D Molecular Models for Biochemistry Credit: 1 (0-1.5-.5)
Course Description: Computer instruction to construct 3D models of proteins and nucleic acids using leading software.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for laboratory and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 463 Molecular Genetics Credits: 3 (3-0-0)
Course Description: Molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (BC 401 with a minimum grade of C, may be taken concurrently or BC 351 with a minimum grade of C) and (LIFE 201B with a minimum grade of C or BZ 350 with a minimum grade of C).
Registration Information: Credit not allowed for both BC 463 and BC 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 464 Molecular Genetics Recitation Credit: 1 (0-0-1)
Course Description: Methods used to study the molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (LIFE 201B and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Registration Information: Must have concurrent registration in BC 463.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 465 Molecular Regulation of Cell Function Credits: 3 (3-0-0)
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.
Prerequisite: (LIFE 210) and (BC 403, may be taken concurrently or BC 351).
Registration Information: Credit not allowed for both BC 465 and BC 565.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 466 Molecular Regulation of Cell Function-Honors Credit: 1 (0-0-1)
Course Description: Discussions of current articles in cell biology including methods and molecular mechanisms that explain cell behavior in health and disease.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 467 Biochemistry of Disease Credits: 3 (3-0-0)
Course Description: Biochemical basis of specific human diseases.
Prerequisite: BC 401.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 475 Mentored Research Credits: 3 (0-6-1)
Course Description: Plan and conduct mentored research with weekly discussion of progress, presentation at all-university symposium, and submission of written report.
Prerequisite: BC 404.
Registration Information: Must register for laboratory and recitation. Maximum of 9 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 484 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Assist in teaching selected courses in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BC 487A Internship Credits: Var[1-18] (0-0-0)
Course Description: Work experience with an approved preceptor outside of a university laboratory environment.
Prerequisite: BC 401 and BC 403 and BC 404.
Registration Information: Written consent of instructor. Minimum GPA of 2.0.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 487B Internship: International Credits: Var[1-18] (0-0-0)
Course Description: Research in foreign host laboratory in contact with CSU mentor.
Prerequisite: BC 401 and BC 463 and BC 495 - at least 1 credit.
Registration Information: Selection by departmental committee. BC 495 (one credit in lab of CSU mentor).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 493 Senior Seminar Credit: 1 (0-0-1)
Course Description: Critical analysis of selected literature in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: BC 401 or concurrent registration.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Faculty-directed exploration of areas of special interest in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description: Supervised laboratory research in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 498 Research Credits: Var[1-6] (0-0-0)
Course Description: Laboratory-based research in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 499A Thesis: Laboratory Research-Based Credits: 3 (0-0-3)
Course Description: Laboratory-based research thesis.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499B Thesis: Literature Based Credits: 3 (0-0-3)
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499C Thesis: Literature-based in Health and Med Sci Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Health and Med. Sci.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499D Thesis: Literature-based in Pre-Pharmacy Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Pre-Pharmacy.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499E Thesis: Literature-based in Neurobiochemistry Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Neurobiochemistry.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 511 Structural Biology I Credits: 4 (3-0-1)
Course Description: Structural principles of biological macromolecules and techniques of structural analysis.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 512 Principles of Macromolecular Structure Credit: 1 (1-0-0)
Course Description: Physical interactions controlling folding and solution behavior of biological macromolecules, including proteins, nucleic acids, and membranes.
Prerequisite: BC 411, may be taken concurrently.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 513 Enzymology Credit: 1 (1-0-0)
Course Description: Kinetic methods, mechanism, and regulation of enzyme catalysis.
Prerequisite: BC 403.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 517 Metabolism Credits: 2 (2-0-0)
Course Description: Design and regulation of metabolic pathways.
Prerequisite: BC 351 and BC 403.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 521 Principles of Chemical Biology Credits: 3 (3-0-0)
Also Offered As: CHEM 521.
Course Description: Principles of chemical biology. Chemical methods for understanding and controlling the structure and function of biomolecules.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Registration Information: Credit not allowed for both BC 521 and CHEM 521.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BC 563 Molecular Genetics  Credits: 4 (3-0-1)
Course Description: Mechanisms of replication, transcription, processing, translation, and packaging of genetic material, emphasizing original literature and methods.
Prerequisite: BC 401 and LIFE 201B.
Registration Information: Must register for lecture and recitation. Credit not allowed for both BC 563 and BC 463.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 565 Molecular Regulation of Cell Function  Credits: 4 (3-0-1)
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.
Prerequisite: (LIFE 210) and (BC 351 or BC 403, may be taken concurrently).
Registration Information: Credit not allowed for both BC 565 and BC 465. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 566 Advanced Topics in Mitotic Processes  Credit: 1 (1-0-0)
Course Description: Mitotic spindle, microtubules, kinetochores, and molecular motors, specifically during cell division.
Prerequisite: BC 465 or BC 565.
Restriction: Written consent of instructor.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 571 Quantitative Biochemistry  Credit: 1 (1-0-0)
Course Description: Introduction to statistics, error analysis, and curve fitting of biochemical data with a focus on practical examples.
Prerequisite: BC 511, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 589 Current Trends in Molecular Biosciences  Credits: 2 (1-2-0)
Course Description: Biochemical and molecular biological foundations of molecular genetics/genetic engineering; molecular analysis of genes.
Prerequisite: None.
Registration Information: B.S. or B.A. in biology or chemistry; secondary school teaching certification required. Offered as an online course only.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BC 601 Responsible Conduct in Biochemistry  Credit: 1 (1-0-0)
Course Description: Design of experiments; error and fraud, publishing/grant application submission, scientific misconduct, classic examples of fraud, case studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring. (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BC 611 Structural Biology II  Credits: 2 (2-0-0)
Course Description: Structure and interactions of biological macromolecules related to function.
Prerequisite: BC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 663 Gene Expression  Credits: 2 (2-0-0)
Course Description: Eukaryotic transcription mechanisms with emphasis on methods of study and regulatory mechanisms.
Prerequisite: BC 563.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 665A Advanced Topics in Cell Regulation: Microscopic Methods  Credits: 2 (2-0-0)
Course Description: Analysis of cell behavior, function and regulation.
Prerequisite: BC 565.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 665B Advanced Topics in Cell Regulation: Modern Methods  Credits: 2 (2-0-0)
Course Description: Modern methods in cell biology.
Prerequisite: BC 565.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 695 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 698 Research  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
BC 701  Grant Proposal Writing and Reviewing  Credit: 1 (1-0-0)
Course Description: Didactic and hands-on experience with locating funding sources, writing effective grant proposals, and the review process in the bio-molecular sciences.
Prerequisite: (BC 403) and (BC 511, may be taken concurrently) and (BC 563, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 711A  Advanced Topics in Structural Biology: Protein Structure and Function  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711B  Advanced Topics in Structural Biology: Membrane Proteins  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711C  Advanced Topics in Structural Biology: Protein-DNA Interactions  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711D  Advanced Topics in Structural Biology: Biomolecular Spectroscopy  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711E  Advanced Topics in Structural Biology: Biomolecular NMR  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 711F  Advanced Topics in Structural Biology: Macromolecular X-ray Crystallography  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763A  Advanced Molecular Genetics Topics: Chromatin and Transcription  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763B  Advanced Molecular Genetics Topics: Transcriptional Control - Co-Activators and Corepressors  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 763C  Advanced Molecular Genetics Topics: Concepts and Techniques of Genetic Analysis  Credit: 1 (1-0-0)
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 784  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 793  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 796  Group Study  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BC 798  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
Major in Biochemistry

As the name suggests, Biochemistry links biology and chemistry. Biochemistry is most simply defined as the chemistry of living systems. It is the science that tries to explain how "lifeless" molecules work together to make "living" organisms. The methods of chemistry and molecular biology are used to study the structure and behavior of the complex molecules found in biological materials and the ways these molecules interact to form cells, tissues, and whole organisms. Biochemistry provides the basis for advances in human and veterinary medicine, agriculture, and biotechnology. Biochemists may participate in interdisciplinary research and development projects alongside chemical engineers, biologists, microbiologists, agronomists, physicians, and other professionals. They investigate the molecular mechanisms of such diseases as AIDS, diabetes, cancer, heart disease and stroke, and develop solutions to environmental problems through biotechnology.

The Biochemistry major provides a student with a strong, well-balanced background in the biological, physical, and mathematical sciences. As a Biochemistry major, studies include macromolecular structure and function; cellular biochemistry; metabolism; gene expression, DNA and protein structure, DNA replication and repair; cell organization, communication, growth, aging, and death. Students are also required to take courses in physics, organic chemistry, and statistical measurements and methods used in research. Independent study and internships (typically during the junior and senior years, but could start in the freshman year) provide opportunities for experiential learning and working closely with the faculty, sometimes leading to authorship of original publications.

Learning Outcomes
Students will obtain:

• A command of the basic concepts of chemistry, biology, biochemistry, molecular biology, and cellular biology
• The ability to critically analyze, and present the methods, results, and conclusions of scientific papers in the current biochemical literature, and orally present technical material in a clear and comprehensible form
• Experience in use of a variety of laboratory techniques; critically interpret experimental results; and design new experiments
• Demonstrate the ability to perform original research in biochemistry and molecular biology

Potential Occupations
Possible career opportunities include, but are not limited to: process research technician, production/quality assurance lab technician, biomedical/pharmaceutical researcher or salesperson, molecular biologist, biophysicist, cytologist, toxicologist, crime scene investigator, industrial hygienist, dairy technologist, environmental analyst, hygienist, chemist, wastewater treatment chemist, food and drug inspector, museum technician, teacher, writer, fisheries biologist, research analyst, and medical or clinical lab technologist. Many biochemistry majors go on to earn higher degrees in graduate school or health care related professional schools, leading to careers in medicine, veterinary medicine, pharmacy, or law.

Concentrations
• General Biochemistry Concentration
• Health and Medical Sciences Concentration
• Pre-Pharmacy Concentration

Major in Biochemistry, General Biochemistry Concentration

This concentration is designed to provide a broad education in biochemistry and can be tailored to meet the individual needs of specific students. The general degree is recommended for students considering research and/or teaching as a career.

Requirements

Effective Fall 2016

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Freshman

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BC 192</td>
<td>Biochemistry Freshman Seminar</td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)</td>
<td>3A</td>
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<td>LIFE 203</td>
<td>Introductory Genetics Laboratory</td>
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Select one group from the following:
Major in Biochemistry, General Biochemistry Concentration

<table>
<thead>
<tr>
<th>Group A:</th>
<th>Calculus for Biological Scientists I (GT-MA1)</th>
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<tr>
<td>MATH 155</td>
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<td>MATH 255</td>
<td>Calculus for Biological Scientists II (GT-MA1)</td>
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<td>Group B:</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<td>MATH 160</td>
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<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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Total Credits: 31

Sophomore

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<tbody>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>3</td>
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<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>3</td>
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<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
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<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
<td>3</td>
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<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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<tr>
<td>Advanced Writing</td>
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<tr>
<td>AUCC Category 3 courses</td>
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Bioscience Elective (see Biosciences Electives List below) **[2]**

Total Credits: 30-31

Junior

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
<td>4A</td>
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<tr>
<td>BC 403</td>
<td>Comprehensive Biochemistry II</td>
<td>4B</td>
</tr>
<tr>
<td>BC 404</td>
<td>Comprehensive Biochemistry Laboratory</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
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<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>STAT 301 or 307</td>
<td>Introduction to Statistical Methods</td>
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<tr>
<td>STAT 301 or 307</td>
<td>Introduction to Biostatistics</td>
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<tr>
<td>AUCC Category 3 courses</td>
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<td>3B-3E</td>
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Bioscience Elective (see Biosciences Electives List below) **[2]**

Electives

Total Credits: 28-29

Senior

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BC 411</td>
<td>Physical Biochemistry</td>
<td>4</td>
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<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
<td>3</td>
</tr>
<tr>
<td>BC 493</td>
<td>Senior Seminar</td>
<td>4A,4C</td>
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<tr>
<td>BC 499A or 499B</td>
<td>Thesis: Laboratory Research-Based</td>
<td>4C</td>
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<tr>
<td></td>
<td>Thesis: Literature Based</td>
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<tr>
<td>AUCC Category 3 course</td>
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<td>3B-3E</td>
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Bioscience Elective (see Biosciences Electives List below) **[2]**

Electives **[3]**

Total Credits: 29-31

Biosciences Electives List

Select courses in consultation with advisor.
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BC 467</td>
<td>Biochemistry of Disease</td>
<td>3</td>
</tr>
<tr>
<td>BIOM 306/BTEC 306</td>
<td>Bioprocess Engineering</td>
<td>4</td>
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<tr>
<td>BIOM 470/MECH 470</td>
<td>Biomedical Engineering</td>
<td>3</td>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>BMS 301</td>
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<td>Genetics of Model Organisms</td>
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<td>CBE 504</td>
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<td>CHEM 334</td>
<td>Quantitative Analysis Laboratory</td>
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<td>VS 331</td>
<td>Histology</td>
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</table>
Select from the list of courses in categories 3B-3E (six credits [two courses] must come from 3B; one course each from categories 3C, 3D, and 3E) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

Select in consultation with advisor using list approved by the department.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Distinctive Requirements for Degree Program:

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for the Biochemistry major # General Biochemistry concentration assumes students enter college prepared to begin a year#long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-C02)</td>
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<td>Introductory Genetics Laboratory</td>
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<td>MATH 161</td>
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### Sophomore

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<tr>
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<td>Modern Organic Chemistry I</td>
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<tr>
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<td>General Physics I (GT-SC1)</td>
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<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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Junior

Semester 5

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<tr>
<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
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Select one course from the following:

- PH 122 General Physics II (GT-SC1)
- PH 142 Physics for Scientists and Engineers II (GT-SC1)

Select one course from the following:

- STAT 301 Introduction to Statistical Methods
- STAT 307 Introduction to Biostatistics

Elective

Total Credits: 14

Semester 6

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<td>BC 404</td>
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<td>PH 122 or PH 142 must be completed by the end of Semester 6.</td>
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Total Credits: 14

Senior

Semester 7

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<td>BC 411</td>
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<td>BC 463</td>
<td>Molecular Genetics</td>
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<td>BC 493</td>
<td>Senior Seminar</td>
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Total Credits: 14

Semester 8

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<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
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Select one course from the following:

- BC 499A Thesis: Laboratory Research-Based
- BC 499B Thesis: Literature Based

AUCC Category 3 courses

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<td></td>
<td>3-4</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits: 14

Program Total Credits: 120

Major in Biochemistry, Health and Medical Sciences Concentration

This concentration augments the General Biochemistry Concentration with additional coursework in anatomy and physiology, the biochemistry of disease, and medical internship by requiring an additional 14-15 credits of concentration-specific coursework. The Health and Medical Sciences concentration is geared toward students interested in medical, veterinary, or dentistry careers.

Requirements

Effective Fall 2016

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.
### Freshman

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<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>LIFE 203</td>
<td>Introductory Genetics Laboratory</td>
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Select one group from the following:

- **Group A:**
  - MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B
  - MATH 255 Calculus for Biological Scientists II (GT-MA1) 1B

- **Group B:**
  - MATH 160 Calculus for Physical Scientists I (GT-MA1) 1B
  - MATH 161 Calculus for Physical Scientists II (GT-MA1) 1B

**Total Credits** 31

### Sophomore

<table>
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<tr>
<th>Course</th>
<th>Title</th>
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<th>Credits</th>
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<tr>
<td></td>
<td>Fundamentals of Physiology</td>
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<td></td>
</tr>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
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<td>3</td>
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<td>CHEM 343</td>
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<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
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<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
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<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
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Select one from the following:

- PH 121 General Physics I (GT-SC1) 3A
- PH 141 Physics for Scientists and Engineers I (GT-SC1) 3A
- Advanced Writing                                      2   | 3   |
- AUCC Category 3 courses                                 | 3B-3E | 6 |

**Total Credits** 31

### Junior

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<th>Course</th>
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<td>BC 403</td>
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<td>3</td>
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<tr>
<td>BC 404</td>
<td>Comprehensive Biochemistry Laboratory</td>
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Select one from the following:

- BC 475 Mentored Research
- BC 487A Internship
- BC 495 Independent Study

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<th>Title</th>
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<tr>
<td>BMS 301 or 305</td>
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<td></td>
<td>Domestic Animal Gross Anatomy</td>
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Select one from the following:

- PH 122 General Physics II (GT-SC1) 3A
- PH 142 Physics for Scientists and Engineers II (GT-SC1) 3A
- STAT 301 or 307 Introduction to Statistical Methods Introduction to Biostatistics

- AUCC Category 3 courses                                 | 3B-3E | 3 |

**Total Credits** 31
Elective

Total Credits 3

Senior

BC 411 Physical Biochemistry 4
BC 463 Molecular Genetics 3
BC 465 Molecular Regulation of Cell Function 3
BC 467 Biochemistry of Disease 3
BC 493 Senior Seminar 4A,4C 1
BC 499A or 499C Thesis: Laboratory Research-Based 4C 3
Thesis: Literature-based in Health and Med Sci

AUCC Category 3 courses1 3B-3E 6
Electives2 5-6

Total Credits 28-29
Program Total Credits 120

1 Select from the list of courses in categories 3B-3E (six credits [two courses] must come from 3B; one course each from categories 3C, 3D, and 3E) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biochemistry major # Health and Medical Sciences concentration assumes students enter college prepared to begin a year-long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

Freshman

Semester 1

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<tr>
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Semester 2

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Sophomore

Semester 3

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<td>BMS 305</td>
<td>Domestic Animal Gross Anatomy</td>
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<td>BC 493</td>
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Major in Biochemistry, Pre-Pharmacy Concentration

This concentration augments the General Biochemistry Concentration with additional coursework in physiology, microbiology, immunology, and public speaking. This concentration fulfills the prerequisite courses for admission to most pharmacy schools. It is also an appropriate concentration for a career as a medical technician.

Requirements

Effective Fall 2016

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

### Freshman

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Select one group from the following:

- **Group A:**
  - MATH 155: Calculus for Biological Scientists I (GT-MA1) 1B
  - MATH 255: Calculus for Biological Scientists II (GT-MA1) 1B

- **Group B:**
  - MATH 160: Calculus for Physical Scientists I (GT-MA1) 1B
  - MATH 161: Calculus for Physical Scientists II (GT-MA1) 1B

**Total Credits** 31

### Sophomore

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Select one course from the following:

- PH 121: General Physics I (GT-SC1) 3A
- PH 141: Physics for Scientists and Engineers I (GT-SC1) 3A
- SPCM 200: Public Speaking 3
- Advanced Writing 2

**Total Credits** 30
Junior

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Total Credits 30

Senior

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<td>Molecular Regulation of Cell Function</td>
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<td>Thesis: Literature-based in Pre-Pharmacy</td>
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| AUCC Category 3 courses | 3B, 3D, 3E |

| Elective | |
|----------| |

Total Credits 29

Program Total Credits: 120

1 Select from the list of courses in categories 3B,D,E (six credits [two courses] must come from 3B; one course each from categories 3D and 3E) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses. Students should plan on taking ECON 202 as the AUCC Cat 3C requirement.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biochemistry major # Pre-Pharmacy concentration assumes students enter college prepared to begin a year#long calculus sequence (either MATH 155/MATH 255 or MATH 160/MATH 161) in the first semester of their first year.

LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam).

Freshman

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Program Total Credits: 120
**Semester 2**  

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<td>LIFE 203</td>
<td>Introductory Genetics Laboratory</td>
<td>X</td>
<td></td>
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Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>MATH 255</td>
<td>Calculus for Biological Scientists II (GT-MA1)</td>
<td>X</td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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**Total Credits**: 16

---

**Sophomore**  

**Semester 3**

<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>X</td>
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</tr>
<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
<td>X</td>
<td></td>
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<tr>
<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
<td>X</td>
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<td>2</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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<tr>
<td>Foundations and Perspectives</td>
<td></td>
<td>3B, 3D, 3E</td>
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**Total Credits**: 14

**Semester 4**

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<tbody>
<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>X</td>
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<tr>
<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
<td>X</td>
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<tr>
<td>ECON 202</td>
<td>Principles of Microeconomics (GT-SS1)</td>
<td></td>
<td>3C</td>
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Select one course from the following:

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<tbody>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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Advanced Writing

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**Total Credits**: 16

**Junior**  

**Semester 5**

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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
<td>X</td>
<td>4A</td>
<td></td>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td></td>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
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Select one course from the following:

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<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
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<td>3A</td>
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**Total Credits**: 14

**Semester 6**

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>BC 403</td>
<td>Comprehensive Biochemistry II</td>
<td>X</td>
<td>4B</td>
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<tr>
<td>BC 404</td>
<td>Comprehensive Biochemistry Laboratory</td>
<td>X</td>
<td>4B</td>
<td></td>
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<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
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<td>3</td>
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<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
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Foundations and Perspectives

<table>
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<th>Course Title</th>
<th>Credits</th>
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</table>

PH 122 or PH 142 must be completed by the end of Semester 6.

**Total Credits**: 16

**Senior**  

**Semester 7**

<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BC 411</td>
<td>Physical Biochemistry</td>
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Select one course from the following:

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
<td>X</td>
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</table>

**Total Credits**: 16
Minor in Biochemistry

The minor is valuable to students majoring in any biological or physical science or in engineering. The minor requires a sound chemistry background, provides fundamental courses in molecular biosciences, and augments the latter with more specialized courses in biochemistry and molecular genetics.

Requirements
Effective Fall 2010

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td><strong>Lower Division</strong></td>
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<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)</td>
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<tr>
<td>LIFE 203</td>
<td>Introductory Genetics Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td><strong>Upper Division</strong></td>
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<tr>
<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
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<tr>
<td>BC 403</td>
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</tr>
<tr>
<td>BC 404</td>
<td>Comprehensive Biochemistry Laboratory</td>
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<tr>
<td>Select one from the following:</td>
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<tr>
<td>BC 411</td>
<td>Physical Biochemistry</td>
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<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
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<tr>
<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
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</tbody>
</table>

BC 493 Senior Seminar 1

Total Credits 22-23

Department of Biology

Office in Anatomy—Zoology Building, Room E106
(970) 491-7011
biology.colostate.edu (http://www.biology.colostate.edu)

Professor Michael F. Antolin, Chair

Undergraduate Majors
- Major in Biological Science
  - Biological Science Concentration
  - Botany Concentration
- Major in Zoology

Minors
- Minor in Botany
- Minor in Zoology
Graduate Programs in Biology
The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Botany and Zoology. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Biology (http://www.biology.colostate.edu).

Master Programs
- Master of Science in Botany, Plan A*
- Master of Science in Botany, Plan B*
- Master of Science in Zoology, Plan A*
- Master of Science in Zoology, Plan B*
- Professional Science Master's in Natural Sciences – Zoo, Aquarium and Animal Shelter Management Specialization

Ph.D. Programs
- Ph.D. in Botany*
- Ph.D. in Zoology*

* Please see department for program of study.

Courses

**BZ 100 Introduction to Biology** Credits: 3 (0-0-3)
Course Description: Basic concepts in biology, including genetics, the human body, and interactions with their environment.
Prerequisite: None.
Registration Information: Offered as a telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 101 Humans and Other Animals (GT-SC2)** Credits: 3 (3-0-0)
Course Description: Characteristics of animals, their evolution and diversity; humans considered as an animal.
Prerequisite: None.
Registration Information: Credit not allowed for students who have already taken BZ 110 or LIFE 102 or LIFE 103. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

**BZ 104 Basic Concepts of Plant Life (GT-SC2)** Credits: 3 (3-0-0)
Course Description: Broad concepts of biology with major emphasis on plant life.
Prerequisite: None.
Registration Information: For nonscience and physical science majors. Credit not allowed for students who have already taken BZ 120 or LIFE 102 or LIFE 103.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

**BZ 105 Basic Concepts of Plant Life Laboratory (GT-SC1)** Credit: 1 (0-2-0)
Course Description: Modern biology exercises including viruses, Monera, Protista, fungi, plants, genetics, physiology, and ecology.
Prerequisite: BZ 104, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

**BZ 110 Principles of Animal Biology (GT-SC2)** Credits: 3 (3-0-0)
Course Description: General features (body form, physiology, life history, ecology) and evolutionary relationships of major phyla of animals.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

**BZ 111 Animal Biology Laboratory (GT-SC1)** Credit: 1 (0-3-0)
Course Description: Laboratory exercises demonstrating major features of animal biology and major phyla of animals.
Prerequisite: BZ 110, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

**BZ 120 Principles of Plant Biology (GT-SC1)** Credits: 4 (3-3-0)
Course Description: Diversity of relationships of plants and their structural and functional characteristics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

**BZ 121 Animal Biology-Vertebrates Credits: 4 (3-3-0)**
Course Description: General biology of invertebrates; their characteristics, classification, and adaptations.
Prerequisite: LIFE 103 or BZ 110 and BZ 111.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

**BZ 212 Animal Biology-Invertebrates Credits: 4 (3-3-0)**
Course Description: General biology of invertebrates; their characteristics, classification, and adaptations.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

**BZ 214 Animal Biology-Vertebrates Credits: 4 (3-3-0)**
Course Description: General biology of vertebrates; their characteristics, classification, and adaptations.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
BZ 220  Introduction to Evolution  Credits: 3 (3-0-0)
Course Description: Fundamental concepts in evolutionary biology.
Prerequisite: BZ 110 or BZ 120 or LIFE 103.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 223  Plant Identification  Credits: 3 (2-2-0)
Course Description: Relationships and identification of flowering plants.
Prerequisite: BZ 120 or LIFE 103
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 296  Group Study-Biology  Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 300  Animal Behavior  Credits: 3 (3-0-0)
Course Description: Principles of ethology, behaviors of nonhuman animals emphasizing their adaptive significance and phylogenetic relationships.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 301  Animal Behavior Laboratory  Credits: 2 (0-4-0)
Course Description: Laboratory experiments in animal behavior; demonstrations and independent investigations.
Prerequisite: BZ 300, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 302  Poisonous Plants  Credits: 3 (2-2-0)
Course Description: Identification and toxic properties of certain plants; animal reactions to more important ones.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 310  Cell Biology  Credits: 4 (3-3-0)
Course Description: Structure and function of cells emphasizing molecular mechanisms. Communication, metabolism, motility, genetics, growth, and reproduction.
Prerequisite: (BZ 110 or BZ 120 or LIFE 103) and (CHEM 245 with a minimum grade of C or CHEM 341 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 311  Developmental Biology  Credits: 4 (3-2-0)
Course Description: Developmental aspects of growth and differentiation stressed in higher plants and animals.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 321  Developmental Biology  Credits: 4 (3-2-0)
Course Description: Developmental aspects of growth and differentiation stressed in higher plants and animals.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 325  Plant Systematics  Credits: 4 (3-2-0)
Course Description: Principles and contemporary methods of classification of plants, and the application of modern phylogenetic theory in comparative biology.
Prerequisite: BZ 220.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 329  Herpetology  Credits: 3 (2-2-0)
Course Description: Biology of amphibians and reptiles.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 330  Mammalogy  Credits: 3 (2-2-0)
Course Description: Evolution, classification, and biology of mammals; practice in identifying and preparing specimens.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 331  Developmental Plant Anatomy  Credits: 4 (2-4-0)
Course Description: Structure of plant cells, tissues, and organs as they develop.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 332  Introductory Phycology  Credits: 4 (3-2-0)
Course Description: Evolution, diversity, ecology and global impact of algae.
Prerequisite: (BZ 120 or LIFE 102) and (BZ 220).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
BZ 333 Introductory Mycology  Credits: 4 (2-4-0)
Course Description:  Groups of fungi including classification, structure, morphogenesis, phylogeny, and genetics and reproduction.
Prerequisite:  BZ 120 or LIFE 103.
Registration Information:  Must register for lecture and laboratory.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 335 Ornithology  Credits: 3 (2-3-0)
Course Description:  Biology of birds, especially behavior, ecology, and identification in the laboratory and field.
Prerequisite:  BZ 111 and BZ 110 or LIFE 103.
Registration Information:  Must register for lecture and laboratory.
Required field trips.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  Yes.

BZ 338 Comparative Morphology of Vascular Plants  Credits: 4 (2-4-0)
Course Description:  Origin, evolution, structure, and reproduction of the vascular plants, including comparative study of organs occurring in each group.
Prerequisite:  BZ 120 or LIFE 103.
Registration Information:  Must register for lecture and laboratory.
Term Offered:  Spring (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 346 Population and Evolutionary Genetics  Credits: 3 (3-0-0)
Course Description:  Evolutionary theories and history; heredity mechanisms that are basis for variation, evolution, and biological communication between generations.
Prerequisite:  (BZ 220) and (MATH 155) and (STAT 301 or STAT 307 or ERHS 307).
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 348 Theory of Population and Evolutionary Ecology  Credits: 4 (3-3-0)
Also Offered As:  MATH 348.
Course Description:  Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.
Prerequisite:  MATH 155 or MATH 160.
Registration Information:  Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 348, BZ 548, MATH 348.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 349 Tropical Ecology and Evolution  Credits: 3 (3-0-0)
Course Description:  Broad introduction to terrestrial and aquatic tropical biodiversity and the ecological and evolutionary processes that generate and maintain it.
Prerequisite:  BZ 220.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 350 Molecular and General Genetics  Credits: 4 (3-0-1)
Course Description:  Mendelian, molecular, and population genetics emphasizing the molecular basis of genetics.
Prerequisite:  (BZ 110 or BZ 120 or LIFE 102) and (STAT 201, may be taken concurrently or STAT 301, may be taken concurrently or STAT 307, may be taken concurrently or ERHS 307, may be taken concurrently).
Registration Information:  Must register for lecture and recitation. Primarily for students in biological sciences.
Term Offered:  Fall, Spring, Summer.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 353 Global Change Ecology, Impacts and Mitigation  Credits: 3 (3-0-0)
Also Offered As:  NR 353.
Course Description:  Ecological impacts of human-induced global change, and the strategies that can/are being used to adapt to and mitigate these impacts.
Prerequisite:  LIFE 320 or LIFE 220 or LAND 220.
Registration Information:  Credit not allowed for both BZ 353 and NR 353.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 360 Bioinformatics and Genomics  Credits: 3 (3-0-0)
Course Description:  Genomics, bioinformatics, and basic computer programming for biologists.
Prerequisite:  BZ 110 or BZ 120 or LIFE 102.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 384 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite:  None.
Registration Information:  3.0 overall GPA; written consent of instructor; grade of A in course with which student assists. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered:  Fall, Spring.
Grade Mode:  Instructor Option.
Special Course Fee:  No.

BZ 401 Comparative Animal Physiology  Credits: 3 (3-0-0)
Course Description:  Physiological mechanisms of digestion, metabolism, osmoregulation, excretion, circulation, and respiration in vertebrate and invertebrate animals.
Prerequisite:  BZ 214.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

BZ 402 Molecular Cytogenetics  Credits: 4 (3-3-0)
Course Description:  Structure, function, and behavior of chromosomes during interphase, mitosis, and meiosis.
Prerequisite:  (BZ 310, may be taken concurrently or LIFE 210, may be taken concurrently) and (BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or STAT 307, may be taken concurrently).
Registration Information:  Must register for lecture and laboratory.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.
**BZ 403** Comparative Endocrinology  Credits: 3 (3-0-0)
Course Description: Comparison of endocrine molecules, responses, and control mechanisms in vertebrates and invertebrates emphasizing molecular aspects.
Prerequisite: BZ 310.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 415** Marine Biology  Credits: 4 (3-0-1)
Course Description: Marine organisms, habitats, and communities.
Prerequisite: (BC 351 or BC 401) and (BZ 214).
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 418** Ecology of Infectious Diseases  Credits: 4 (3-0-1)
Course Description: Ecological perspectives of infectious disease outbreaks in wildlife and human populations.
Prerequisite: LIFE 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 420** Evolutionary Medicine  Credits: 3 (3-0-0)
Course Description: Integration of evolutionary biology with behavior, genetics, and ecology to understand health and disease.
Prerequisite: BZ 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 424** Principles of Systematic Zoology  Credits: 3 (3-0-0)
Also Offered As: BSPM 424.
Course Description: Principles and methods of classification, zoological nomenclature, taxonomic decisions regarding species and higher categories.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BZ 424 and BSPM 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 425** Molecular Ecology  Credits: 3 (3-0-0)
Course Description: Introduction to molecular genetic markers for questions in ecology, evolution, behavior, and conservation.
Prerequisite: (BZ 220 and BZ 350) and (STAT 301 or STAT 307).
Registration Information: Credit not allowed for both BZ 425 and BZ 525.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 430** Animal Behavior and Conservation  Credits: 3 (3-0-0)
Course Description: The interface between animal behavior and conservation biology, exploring how behavioral tools can be applied to conservation problems.
Prerequisite: (BZ 110 and BZ 111 or LIFE 103) and (BZ 300).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 433** Behavioral Genetics  Credits: 4 (3-0-1)
Course Description: An integrative view of genetic basis of animal behavior, with emphasis on complex behaviors and societal implications of genetics research.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and recitation. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 440** Plant Physiology  Credits: 3 (3-0-0)
Course Description: Functions and activities of plants.
Prerequisite: BZ 120 or LIFE 103.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 441** Plant Physiology Laboratory  Credits: 2 (0-2-1)
Course Description: Laboratory applications of plant physiology principles.
Prerequisite: BZ 440, may be taken concurrently.
Registration Information: Must register for laboratory and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 450** Plant Ecology  Credits: 4 (3-2-0)
Course Description: Relation of plants to their environment.
Prerequisite: LIFE 103 or BZ 120.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 455** Human Heredity and Birth Defects  Credits: 3 (3-0-0)
Course Description: Human heredity and its individual and social implications; causes of congenital defects.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 460** Genome Evolution  Credits: 4 (3-0-1)
Course Description: Evolution of DNA, RNA, and proteins; use of genomic data to infer evolutionary history and processes.
Prerequisite: BZ 220 and BZ 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BZ 462** Parasitology and Vector Biology  Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related anthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 462, BSPM 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BZ 466 Biological Basis of Animal Behavior Credits: 4 (3-2-0)
Course Description: An integrative view of mechanisms of animal behavior spanning genetics, neural systems, development, functional morphology, and evolution.
Prerequisite: (BMS 325 or BZ 310 or LIFE 210) and (STAT 301 or STAT 307).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 471 Stream Biology and Ecology Credits: 3 (3-0-0)
Course Description: Biology and ecology of running waters.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 472 Stream Biology and Ecology Laboratory Credit: 1 (0-3-0)
Course Description: Field sampling and laboratory analysis of habitats, biota, and ecological relationships in running waters.
Prerequisite: BZ 471, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 474 Limnology Credits: 3 (2-2-0)
Course Description: Biology, chemistry, and physics of lakes including limnological methods.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 476 Genetics of Model Organisms Credits: 3 (3-0-0)
Also Offered As: BZ 576.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 476 and BZ 576.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 479 Biology and Behavior of Dogs Credits: 3 (3-0-0)
Also Offered As: VS 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BZ 479 and VS 479. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482A Study Abroad: Field Marine Biology Credits: 4 (0-0-4)
Course Description: Exposure to two of the most productive and biologically diverse marine areas in North America. Field sampling and exploration of marine ecosystems from levels of primary production to the top level predators. Students will learn a wide variety of hands on sampling techniques and data analyses with the goal of comparing the marine ecology of the Baja peninsula.
Prerequisite: BZ 415 and BZ 496.
Registration Information: Written consent of instructor. Students to apply through Office of International Programs. Junior Standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Supervised work-related research experience in laboratory or field setting with consultation and approval of a regular faculty member.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 492A Seminar: Behavior Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492B Seminar: Ecology Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492C Seminar: Genetics Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492D Seminar: Ornithology Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492E Seminar: Herpetology Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492F Seminar: Evolution Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BZ 492G Seminar: Departmental Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 7 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 496 Group Study—Biology Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 498 Laboratory or Field Research Credits: Var[1-6] (0-0-0)
Course Description: Supervised laboratory or field research in biology, botany, or zoology.
Prerequisite: None.
Registration Information: Written consent of research mentor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 505 Cognitive Ecology Credits: 3 (3-0-0)
Course Description: The evolutionary ecology of mechanisms related to information processing and decision-making in animals.
Prerequisite: BZ 300.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 510 Zoophysiological Ecology Credits: 3 (3-0-0)
Course Description: Concepts, principles, and examples of adaptive physiological strategies used by animals.
Prerequisite: (BMS 300 or BMS 360 or BZ 401) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 515 Physiological Ecology of Marine Vertebrates Credits: 3 (3-0-0)
Course Description: Physiological adaptations of vertebrates to different marine environments.
Prerequisite: (BZ 214 and BZ 330) and (BC 351 or BC 401 or BMS 300 or BZ 401).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BSPM 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BZ 325 or BZ 424 or BSPM 424.
Registration Information: Credit not allowed for both BZ 520 and BSPM 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 525 Molecular Ecology Credits: 4 (3-0-1)
Course Description: Molecular genetic markers for questions in ecology, evolution, behavior, and conservation.
Prerequisite: (BZ 220 and BZ 350) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both BZ 525 and BZ 425.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BSPM 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Registration Information: Credit not allowed for both BZ 526 and BSPM 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 530 Ecological Plant Morphology Credits: 2 (2-0-0)
Course Description: Adaptive significance and evolution of plant form and structure.
Prerequisite: (BZ 220) and (LIFE 320 or BZ 450).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 535 Behavioral Ecology Credits: 3 (3-0-0)
Course Description: Evolutionary and theoretical perspectives in animal behavior using examples from model empirical systems; emphasis on decision rules and social behavior.
Prerequisite: BZ 220.
Registration Information: Graduate standing. Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 537 Topics in Mycology Credits: 3 (2-2-0)
Course Description: Features common to all fungi; trends in structure, function, and behavior.
Prerequisite: BZ 333.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
BZ 540 Translocation in Plants Credits: 2 (2-0-0)
Course Description: Transport of sugars, organic and inorganic ions, water, and hormones across membranes and through vascular systems of plants.
Prerequisite: BZ 331 and BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 544 Presenting Research in Biology Credits: 2 (2-0-0)
Course Description: Procedures for preparing and presenting results of biological research in scientific journals and at professional meetings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BZ 548 Theory of Population and Evolutionary Ecology Credits: 4 (3-3-0)
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology; research module.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 548, BZ 348, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 555 Reproductive Biology of Higher Plants Credits: 3 (3-0-0)
Course Description: Reproductive processes influencing evolution in higher plant groups.
Prerequisite: (BZ 310 or LIFE 210) and (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 561 Landscape Ecology Credits: 3 (3-0-0)
Course Description: Concepts, methods, and models for examining spatial patterns and processes of natural and managed landscapes and their effects on ecological dynamics.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 570 Molecular Aspects of Plant Development Credits: 3 (3-0-0)
Course Description: Various aspects of plant development at the molecular level.
Prerequisite: BC 463 or BZ 350 or MIP 450 or SOCR 330.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 572 Phytoremediation Credits: 3 (3-0-0)
Course Description: Environmental cleanup using plants.
Prerequisite: BZ 120 or LIFE 103.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 575 Molecular and Genomic Evolution Credits: 3 (3-0-0)
Also Offered As: BSPM 575.
Course Description: Molecular, biological mechanisms of evolutionary change: mutation; selection; gene expression/regulation; changes in whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BZ 575 and BSPM 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 576 Genetics of Model Organisms Credits: 4 (3-0-1)
Also Offered As: AZ 476.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 576 and BZ 476.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 577 Computer Analysis in Population Genetics Credits: 2 (0-4-0)
Also Offered As: MIP 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: BZ 578, may be taken concurrently or MIP 578, may be taken concurrently.
Registration Information: Credit not allowed for both BZ 577 and MIP 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 578 Genetics of Natural Populations Credits: 4 (3-0-1)
Also Offered As: MIP 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both BZ 578 and MIP 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 584 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 587A Internship: General Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BZ 587B Internship: Herbarium Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 594 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 642 Plant Metabolism Credits: 3 (3-0-0)
Course Description: Biosyntheses and transformations of important plant metabolites.
Prerequisite: BC 351 and BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 692A Seminar: Behavior Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692C Seminar: Ecology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692D Seminar: Genetics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692E Seminar: Ornithology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692G Seminar: Evolution Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692H Seminar: Departmental Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 795 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU and mathematical courses used to meet requirements for the major. This applies to courses taken as substitutions for meeting these requirements.

To be qualified for graduation, students in the Biological Science major must have a minimum grade of C- in each of their biological, physical science, and a number of health professions such as podiatry or optometry. Effective Fall 2015, participation in internships and/or laboratory research experience is highly recommended and strongly encouraged by the department to enhance practical training and development.

Combining biology with non-science skills can also lead to exciting careers. Biology and English can be incorporated into a career as a technical writer or science fiction novelist. Biology and art are combined in medical and scientific illustration. Biology and computer science can be linked in the exciting area of bioinformatics, or as an historian of science or medicine. Work in both biology and philosophy/religion can be incorporated in careers in bioethics. Biology is linked with psychology for the neuroscientist or genetic counselor. Study biology and political science to work in environmental law or be a patent lawyer in biotechnology. Try mixing biology and business to get into hospital administration, small business or biotechnology administration. Specialized master's degrees are designed for many of these unique career paths.

Some career opportunities include, but are not limited to: aquarium, zoo, and museum worker; assistant research scientist; research technician in industry or university laboratories; biology photographer; biotechnologist; brewery laboratory assistant; consumer product researcher; marine bacteriologist, biologist, or ecologist; nuclear medicine technician; park naturalist; pharmaceutical researcher or salesperson; public health officer; science librarian; environmental educator, health specialist, or impact specialist; ecologist; fisheries biologist or conservationist; industrial hygienist; occupational therapist (with a master’s degree); and medical or clinical laboratory technologist.

Potential Occupations
Training in biology prepares students for a very large number of occupations. Some involve daily interaction with dozens of people, others can be done in relative isolation; some are highly focused, others require knowledge far beyond science. Career options related to biology include water quality assessments, field and lab technician work, biotechnology in biomedical sciences and agriculture, genetic research, agriculture, or sales (i.e., pharmaceutical, agricultural). Graduates work in small businesses, multinational corporations, academia, and government research laboratories and policy agencies. A degree in biological science offers a broad foundation for dental, medical, or veterinary school, and a number of health professions such as podiatry or optometry. Graduates often pursue advanced degrees in life sciences to carry out basic research or advance into leadership positions in industry. Participation in internships and/or laboratory research experience is highly recommended and strongly encouraged by the department to enhance practical training and development.

BZ 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Biological Science
Biology is the study of all living things—from bacteria and viruses that can be seen only under a microscope, to plants, animals, and humans and their relationship to their environments. Biology majors study the structure and function of cells, organ systems and tissues in animals and plants, ecology (the relationship between living things and their environment), and evolution. They learn about physiology, behavior, genetics and heredity, aquatic toxicology, microscopic organisms such as bacteria, and laboratory techniques for diverse areas ranging from field research to biotechnology. This major provides a solid foundation of understanding in the basic biological sciences. It also offers an opportunity to choose an area of emphasis within life sciences that is related to particular career goals (for example: the ecology of organisms in the field, cell and molecular biology for biomedical professions or biotechnology, aquatic biology for marine biologists, plant molecular biology for agricultural biotechnology and bioenergy, etc.).

Learning Outcomes
Students will:

• Interpret scientific data.
• Demonstrate strong organizational and laboratory skills.
• Define scientific hypotheses and design experiments to test them.
• Work effectively in groups.
• Demonstrate strong writing and oral communication skills.

Potential Occupations
Training in biology prepares students for a very large number of occupations. Some involve daily interaction with dozens of people, others can be done in relative isolation; some are highly focused, others require knowledge far beyond science. Career options related to biology include water quality assessments, field and lab technician work, biotechnology in biomedical sciences and agriculture, genetic research, agriculture, or sales (i.e., pharmaceutical, agricultural). Graduates work in small businesses, multinational corporations, academia, and government research laboratories and policy agencies. A degree in biological science offers a broad foundation for dental, medical, or veterinary school, and a number of health professions such as podiatry or optometry. Graduates often pursue advanced degrees in life sciences to carry out basic research or advance into leadership positions in industry. Participation in internships and/or laboratory research experience is highly recommended and strongly encouraged by the department to enhance practical training and development.

Combining biology with non-science skills can also lead to exciting careers. Biology and English can be incorporated into a career as a technical writer or science fiction novelist. Biology and art are combined in medical and scientific illustration. Biology and computer science can be linked in the exciting area of bioinformatics, or as an historian of science or medicine. Work in both biology and philosophy/religion can be incorporated in careers in bioethics. Biology is linked with psychology for the neuroscientist or genetic counselor. Study biology and political science to work in environmental law or be a patent lawyer in biotechnology. Try mixing biology and business to get into hospital administration, small business or biotechnology administration. Specialized master's degrees are designed for many of these unique career paths.

Some career opportunities include, but are not limited to: aquarium, zoo, and museum worker; assistant research scientist; research technician in industry or university laboratories; biology photographer; biotechnologist; brewery laboratory assistant; consumer product researcher; marine bacteriologist, biologist, or ecologist; nuclear medicine technician; park naturalist; pharmaceutical researcher or salesperson; public health officer; science librarian; environmental educator, health specialist, or impact specialist; ecologist; fisheries biologist or conservationist; industrial hygienist; occupational therapist (with a master’s degree); and medical or clinical laboratory technologist.

Concentrations
• Biological Science Concentration
• Botany Concentration

Major in Biological Science, Biological Science Concentration
The curriculum includes a two-semester introductory biology sequence, cell biology, developmental biology, ecology, evolution, and genetics. Required courses in the physical sciences include a minimum of one year in introductory chemistry and in physics (with labs), and at least one course in organic chemistry (with lab), and one in biochemistry. A calculus course and a statistics course are also required. In addition, students choose a selected field of 12 credits in one of the following: anatomy/physiology, aquatic biology, behavioral biology, cellular/molecular and genetic biology, ecology, evolution/genetics, and systematics, microbiology, or integrative organismal biology. There is an additional requirement of one course in two other fields, which assures a broad base of study.

Requirements

Effective Fall 2015
To be qualified for graduation, students in the Biological Science major must have a minimum grade of C- in each of their biological, physical science, and mathematical courses used to meet requirements for the major. This applies to courses taken as substitutions for meeting these requirements. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

Select one group from the following:
Group A:
BZ 110 Principles of Animal Biology (GT-SC2) 3A
BZ 111 Animal Biology Laboratory (GT-SC1) 3A
BZ 120 Principles of Plant Biology (GT-SC1) 3A

Group B:
LIFE 102 Attributes of Living Systems (GT-SC1) 3A
LIFE 103 Biology of Organisms-Animals and Plants
CHEM 111 General Chemistry I (GT-SC2) 3A 4
CHEM 112 General Chemistry Lab I (GT-SC1) 3A 1
CO 150 College Composition (GT-CO2) 1A 3
Select one from the following: 4
MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B
MATH 160 Calculus for Physical Scientists I (GT-MA1)
Arts and Humanities 3B 3
Elective 6

Total Credits 29

Sophomore

BZ 220 Introduction to Evolution 3
CHEM 113 General Chemistry II 3
CHEM 114 General Chemistry Lab II 1
Select one group from the following: 3-5
Group A:
CHEM 245 Fundamentals of Organic Chemistry
CHEM 246 Fundamentals of Organic Chemistry Laboratory
Group B:
CHEM 341 Modern Organic Chemistry I
STAT 301 or 307 Introduction to Statistical Methods
Introduction to Biostatistics 3
Selected Field (see Selected Field lists below) 6
Arts and Humanities 3B 3
Global and Cultural Awareness 3E 3
Historical Perspectives 3D 3
Social and Behavioral Sciences 3C 3

Total Credits 31-33

Junior

Select one group from the following: 4-6
Group A:
BC 351 Principles of Biochemistry
Group B:
BC 401 Comprehensive Biochemistry I
BC 403 Comprehensive Biochemistry II
BZ 350 Molecular and General Genetics 4A,4B 4
Students should take the following two courses only if CHEM 341 was selected in the sophomore year: 0-5
CHEM 343 Modern Organic Chemistry II
CHEM 344 Modern Organic Chemistry Laboratory
Select one group from the following: 5
Group A:
PH 121 General Physics I (GT-SC1) 3A
PH 122 General Physics II (GT-SC1) 3A
Group B:
PH 141  Physics for Scientists and Engineers I (GT-SC1)  3A
PH 142  Physics for Scientists and Engineers II (GT-SC1)  3A

Selected Field (see Selected Field lists below)  3
Advanced Writing  2  3
Elective  0-4

Total Credits  28-31

Senior

BZ 310  Cell Biology  4
BZ 311  Developmental Biology  4
LIFE 320  Ecology  4C  3

Selected Field (see Selected Field lists below)  3
Additional fields  6

Electives  2-17

Total Credits  22-37

Program Total Credits:  120-126

The Biology Department maintains a list of current selected fields. Twelve credits must be taken from one field.

Anatomy/Physiology Field Department List

<table>
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<tr>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>BMS 360</td>
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<tr>
<td>BZ 440</td>
<td>Plant Physiology</td>
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Selected Courses:  8-9

Select enough credits from the following courses to complete the 12-credit field requirement:

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<td>ANEQ 310</td>
<td>Animal Reproduction</td>
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<tr>
<td>BMS *** All BMS courses numbered 300 and above except BMS 310, BMS 384, and BMS 495</td>
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<tr>
<td>BSPM 525</td>
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<td>BZ 331</td>
<td>Developmental Plant Anatomy</td>
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<tr>
<td>BZ 401</td>
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<tr>
<td>BZ 403</td>
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<td>BZ 440</td>
<td>Plant Physiology</td>
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<td>BZ 441</td>
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<tr>
<td>ERHS 450</td>
<td>Introduction to Radiation Biology</td>
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<td>F 510</td>
<td>Ecophysiology of Trees</td>
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<tr>
<td>FW 405</td>
<td>Fish Physiology</td>
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<td>HES 403</td>
<td>Physiology of Exercise</td>
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<td>MIP 315</td>
<td>Human and Animal Disease</td>
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<td>MIP 342</td>
<td>Immunology</td>
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<tr>
<td>MIP 343</td>
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<tr>
<td>PSY 454</td>
<td>Biological Psychology</td>
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<td>Histology</td>
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<tr>
<td>VS 333</td>
<td>Domestic Animal Anatomy</td>
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Aquatic Biology Field Department List

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<td>BSPM 445</td>
<td>Aquatic Insects</td>
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<td>BZ 321</td>
<td>Aquatic Vascular Plants</td>
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<td>BZ 332</td>
<td>Introductory Phycology</td>
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### Behavioral Biology Field Department List

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<tr>
<td><strong>Required Courses:</strong></td>
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<tr>
<td>BMS 325</td>
<td>Cellular Neurobiology</td>
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<td>BZ 300</td>
<td>Animal Behavior</td>
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<td>BSPM 570</td>
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<td>BZ 301</td>
<td>Animal Behavior Laboratory</td>
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<td>BZ 430</td>
<td>Animal Behavior and Conservation</td>
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<td>BZ 433</td>
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<tr>
<td>BZ 466</td>
<td>Biological Basis of Animal Behavior</td>
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<td>BZ 479/VS 479</td>
<td>Biology and Behavior of Dogs</td>
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<tr>
<td>NB 501</td>
<td>Cellular and Molecular Neurophysiology</td>
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<td>PSY 352</td>
<td>Learning and Memory</td>
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<td>Biological Psychology</td>
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### Cellular, Molecular and Genetic Biology Field Department List

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<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
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<td>BC 403</td>
<td>Comprehensive Biochemistry II</td>
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<td>BC 463</td>
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<tr>
<td>BC 511</td>
<td>Structural Biology I</td>
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<td>BC 513</td>
<td>Enzymology</td>
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<td>BC 517</td>
<td>Metabolism</td>
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<td>BMS 330</td>
<td>Microscopic Anatomy</td>
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<td>BMS 405</td>
<td>Nerve and Muscle-Toxins, Trauma and Disease</td>
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<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
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<td>BZ 402</td>
<td>Molecular Cytogenics</td>
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<td>BZ 403</td>
<td>Comparative Endocrinology</td>
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<td>Molecular Ecology</td>
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<td>BZ 433</td>
<td>Behavioral Genetics</td>
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<td>BZ 455</td>
<td>Human Heredity and Birth Defects</td>
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<td>Genetics of Model Organisms</td>
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<td>BZ 570</td>
<td>Molecular Aspects of Plant Development</td>
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<tr>
<td>BZ 577/MIP 577</td>
<td>Computer Analysis in Population Genetics</td>
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<td>Genetics of Natural Populations</td>
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<td>CM 501</td>
<td>Advanced Cell Biology</td>
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<td>HORT 575</td>
<td>Plant Germplasm Conservation</td>
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<td>General Microbiology Laboratory</td>
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<td>VS 331</td>
<td>Histology</td>
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### Ecology Field Department List

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<td>BSPM 302</td>
<td>Applied and General Entomology</td>
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<tr>
<td>BZ 325</td>
<td>Plant Systematics</td>
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<tr>
<td>BZ 329</td>
<td>Herpetology</td>
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<tr>
<td>BZ 330</td>
<td>Mammalology</td>
<td></td>
</tr>
<tr>
<td>BZ 332</td>
<td>Introductory Phycology</td>
<td></td>
</tr>
<tr>
<td>BZ 333</td>
<td>Introductory Mycology</td>
<td></td>
</tr>
<tr>
<td>BZ 335</td>
<td>Ornithology</td>
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</tr>
<tr>
<td>BZ 338</td>
<td>Comparative Morphology of Vascular Plants</td>
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<tr>
<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
<td></td>
</tr>
<tr>
<td>FW 301</td>
<td>Ichthyology Laboratory</td>
<td></td>
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<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
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<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
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<td><strong>Group B:</strong></td>
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<td>ANTH 370</td>
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<td>BSPM 570</td>
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<tr>
<td>BZ 348/MATH 348</td>
<td>Theory of Population and Evolutionary Ecology</td>
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<tr>
<td>BZ 349</td>
<td>Tropical Ecology and Evolution</td>
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<tr>
<td>BZ 353/NR 353</td>
<td>Global Change Ecology, Impacts and Mitigation</td>
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<tr>
<td>BZ 415</td>
<td>Marine Biology</td>
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<tr>
<td>BZ 425</td>
<td>Molecular Ecology</td>
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<tr>
<td>BZ 430</td>
<td>Animal Behavior and Conservation</td>
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<td>Plant Ecology</td>
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<tr>
<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
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<td>Limnology</td>
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<td>BZ 561</td>
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<td>Phytoremediation</td>
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<td>FW 400</td>
<td>Conservation of Fish in Aquatic Ecosystems</td>
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<td>FW 544</td>
<td>Ecotoxicology</td>
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<td>RS 331</td>
<td>Wildland Plants and Plant Communities</td>
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<td>RS 351</td>
<td>Wildland Ecosystems in a Changing World</td>
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<td>RS 478</td>
<td>Ecological Restoration</td>
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**Evolution, Genetics and Systematics Field Department List**

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<tr>
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<tr>
<td>BZ 346</td>
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**Selected Courses:**

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<td>ANTH 374</td>
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<tr>
<td>BSPM 302</td>
<td>Applied and General Entomology</td>
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<td>BSPM 303A</td>
<td>Entomology Laboratory: General</td>
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<tr>
<td>BSPM 423</td>
<td>Evolution and Classification of Insects</td>
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<td>Parasitology and Vector Biology</td>
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<td>BSPM 507</td>
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<td>BSPM 520/BZ 520</td>
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<td>BZ 329</td>
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<td>BZ 330</td>
<td>Mammalogy</td>
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<td>BZ 332</td>
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<td>BZ 333</td>
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<td>BZ 338</td>
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<td>BZ 455</td>
<td>Human Heredity and Birth Defects</td>
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<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
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<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
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<td>SOCR 535</td>
<td>Origin and Evolution of Cultivated Plants</td>
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**Integrative Organismal Biology Field Department List**

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**List A: Botany**

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<td>Poisonous Plants</td>
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<td>BZ 321</td>
<td>Aquatic Vascular Plants</td>
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<td>BZ 325</td>
<td>Plant Systematics</td>
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<td>BZ 332</td>
<td>Introductory Phycology</td>
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<tr>
<td>BZ 333</td>
<td>Introductory Mycology</td>
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<td>BZ 338</td>
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<td>Plant Ecology</td>
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<td>BZ 572</td>
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**List B: Zoology**

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<tr>
<td>BSPM 303A</td>
<td>Entomology Laboratory: General</td>
</tr>
<tr>
<td>BSPM 424/BZ 424</td>
<td>Principles of Systematic Zoology</td>
</tr>
<tr>
<td>BSPM 462/BZ 462/MIP 462</td>
<td>Parasitology and Vector Biology</td>
</tr>
<tr>
<td>BZ 212</td>
<td>Animal Biology-Invertebrates</td>
</tr>
<tr>
<td>BZ 214</td>
<td>Animal Biology-Vertebrates</td>
</tr>
<tr>
<td>BZ 300</td>
<td>Animal Behavior</td>
</tr>
<tr>
<td>BZ 329</td>
<td>Herpetology</td>
</tr>
<tr>
<td>BZ 330</td>
<td>Mammalogy</td>
</tr>
<tr>
<td>BZ 335</td>
<td>Ornithology</td>
</tr>
<tr>
<td>BZ 349</td>
<td>Tropical Ecology and Evolution</td>
</tr>
<tr>
<td>BZ 415</td>
<td>Marine Biology</td>
</tr>
<tr>
<td>BZ 430</td>
<td>Animal Behavior and Conservation</td>
</tr>
<tr>
<td>BZ 466</td>
<td>Biological Basis of Animal Behavior</td>
</tr>
<tr>
<td>BZ 471</td>
<td>Stream Biology and Ecology</td>
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<tr>
<td>BZ 472</td>
<td>Stream Biology and Ecology Laboratory</td>
</tr>
<tr>
<td>BZ 474</td>
<td>Limnology</td>
</tr>
<tr>
<td>BZ 479/VS 479</td>
<td>Biology and Behavior of Dogs</td>
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<tr>
<td>FW 300</td>
<td>Biology and Diversity of Fishes</td>
</tr>
<tr>
<td>FW 301</td>
<td>Ichthyology Laboratory</td>
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<tr>
<td>FW 400</td>
<td>Conservation of Fish in Aquatic Ecosystems</td>
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<tr>
<td>GEOL 342</td>
<td>Paleontology</td>
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</table>

**Microbiology Field Department List**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>Select a minimum of 12 credits from the following:</td>
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<tr>
<td>BSPM 361</td>
<td>Elements of Plant Pathology</td>
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<tr>
<td>BSPM 550</td>
<td>Molecular Plant-Microbe Interactions</td>
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</tr>
<tr>
<td>BZ 332</td>
<td>Introductory Phycology</td>
<td></td>
</tr>
<tr>
<td>BZ 333</td>
<td>Introductory Mycology</td>
<td></td>
</tr>
<tr>
<td>BZ 537</td>
<td>Topics in Mycology</td>
<td></td>
</tr>
<tr>
<td>MIP *** All MIP courses numbered 300 and above except MIP 315, MIP 342, MIP 343, MIP 384, MIP 495</td>
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</tr>
<tr>
<td>SOCR 455</td>
<td>Soil Microbiology</td>
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</tr>
<tr>
<td>SOCR 456</td>
<td>Soil Microbiology Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

1. A minimum of one course must be selected from two additional fields (cannot use courses that were used to fulfill selected field). Courses in additional fields must be at least three credits.
2. Select enough elective credits to bring the program total to a minimum of 120-126 credits, of which at least 42 must be upper-division (300- to 400-level).
Only one of BMS 300 and BMS 360 may be used to fulfill the 12-credit Anatomy/Physiology Field requirement.

## Major Completion Map

### Distinctive Requirements for Degree Program:

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for the Biological Sciences major #Biological Sciences concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill precalculus requirements in the first semester. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). Earned grade of C or better is required in each of their biological, physical science, and mathematical courses used to meet requirements for the major. Semester 4 may have to be adjusted if the student chooses 2 semesters of Organic Chemistry. The selected and additional field must be a minimum of 18 credits. Do not attempt BZ 310 and BZ 350 before Junior year. Do not take BZ 310 and BZ 350 together.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BZ 110 Principles of Animal Biology (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BZ 111 Animal Biology Laboratory (GT-SC1)</td>
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<td>3A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B:</td>
<td></td>
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<td></td>
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<tr>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
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<td>CO 150 College Composition (GT-CO2)</td>
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**Total Credits** 16

<table>
<thead>
<tr>
<th>Semester 2</th>
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<th>AUCC</th>
<th>Credits</th>
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<td>Select one course from the following:</td>
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<tr>
<td>BZ 120 Principles of Plant Biology (GT-SC1)</td>
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<td>LIFE 103 Biology of Organisms-Animals and Plants</td>
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<tr>
<td>CHEM 111 General Chemistry I (GT-SC2)</td>
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<td>3A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 112 General Chemistry Lab I (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

- MATH 155 Calculus for Biological Scientists I (GT-MA1) X 1B
- MATH 160 Calculus for Physical Scientists I (GT-MA1) X 1B

CO 150 must be completed by the end of Semester 2. X

MATH 124, MATH 125 may be necessary for some students to fulfill precalculus requirements. X

**Total Credits** 13

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BZ 220 Introduction to Evolution</td>
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<td>CHEM 113 General Chemistry II</td>
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</tr>
<tr>
<td>CHEM 114 General Chemistry Lab II</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Selected Field (See Department List on Concentration Requirements tab)</td>
<td>X</td>
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</table>

MATH 155 or MATH 160 must be completed by the end of Semester 3. X

**Total Credits** 16

### Semester 4

Select one group from the following:

Group A:

- CHEM 245 Fundamentals of Organic Chemistry | X |

**Total Credits** 3-5
**CHEM 246**  Fundamentals of Organic Chemistry Laboratory

**Group B:**

**CHEM 341**  Modern Organic Chemistry I **X**

Select one course from the following: **3**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>STAT 301  Introduction to Statistical Methods</td>
<td>X</td>
</tr>
<tr>
<td>STAT 307  Introduction to Biostatistics</td>
<td>X</td>
</tr>
</tbody>
</table>

Global and Cultural Awareness **3E**  **3**

Social and Behavioral Sciences **3C**  **3**

Selected Field (See List on Concentration Requirements Tab) **3**

Total Credits **15-17**

**Junior**

**Semester 5**

<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 351  Principles of Biochemistry</td>
<td></td>
<td></td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>BC 401  Comprehensive Biochemistry I</td>
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<td></td>
<td></td>
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</table>

To complete CHEM 341 series option: **0-5**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 343  Modern Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 344  Modern Organic Chemistry Laboratory</td>
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</table>

Select one course from the following: **5**

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PH 121  General Physics I (GT-SC1)</td>
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<td>X</td>
<td>3A</td>
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</tr>
<tr>
<td>PH 141  Physics for Scientists and Engineers I (GT-SC1)</td>
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<td>X</td>
<td>3A</td>
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Selected Field (See List on Concentration Requirements Tab) **3**

STAT 301 or STAT 307 must be completed by the end of Semester 5. **X**

Total Credits **11-17**

**Semester 6**

<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 403  Comprehensive Biochemistry II</td>
<td></td>
<td></td>
<td></td>
<td>0-3</td>
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<tr>
<td>BZ 350  Molecular and General Genetics</td>
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Select one course from the following: **5**

<table>
<thead>
<tr>
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<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 122  General Physics II (GT-SC1)</td>
<td></td>
<td>X</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>PH 142  Physics for Scientists and Engineers II (GT-SC1)</td>
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Advanced Writing **2**

Electives **0-4**

Total Credits **14-17**

**Senior**

**Semester 7**

<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ 310  Cell Biology</td>
<td></td>
<td>X</td>
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<td>4</td>
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</tbody>
</table>

Selected Field (See List on Concentration Requirements Tab) **3**

Additional Field (See List on Concentration Requirements Tab) **3**

Electives **5**

<table>
<thead>
<tr>
<th>Course</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PH 121 or PH 141 must be completed by the end of Semester 7.</td>
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Total Credits **15**

**Semester 8**

<table>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BZ 311  Developmental Biology</td>
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<td>4</td>
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<tr>
<td>LIFE 320  Ecology</td>
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<td>X</td>
<td>4C</td>
<td>3</td>
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</table>

Additional Field (See List on Concentration Requirements Tab) **X**

Electives **0-9**

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits **10-19**

Program Total Credits: **120-126**
Major in Biological Science, Botany Concentration

Botany is the general study of plants and plant-like organisms from microscopic algae to giant redwoods, from mushrooming fungi to flowering angiosperms. Plant anatomy, how plants grow and develop, and how they survive and interrelate within their environments are topics of study. For students who like the outdoors, a career in plant ecology, taxonomy, or forestry might be appealing. Students attracted to the beauty and design of the microscopic world might enjoy a career in plant anatomy or plant developmental biology. Those interested in chemistry might enjoy plant biochemistry, molecular biology, or plant biotechnology. Those intrigued by plant diseases might become plant pathologists and the mathematically oriented might explore systems ecology, genetics, or plant biotechnology.

The Botany curriculum begins with a solid foundation in mathematics, the biological sciences, chemistry, organic chemistry, physics, evolution, and genetics. Botany emphasizing terrestrial plant studies including plant systematics, anatomy, and ecology, biochemistry, and earth sciences round out the core. Botany students also take liberal arts and communications courses to give breadth to their education.

Requirements

Effective Fall 2015

To be qualified for graduation, students in the Biological Science major must have a minimum grade of C- in each of their biological, physical science, and mathematical courses used to meet requirements for the major. This applies to courses taken as substitutions for meeting these requirements. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

Freshman

Select one group from the following:

| Group A: |
|---|---|
| BZ 110 | Principles of Animal Biology (GT-SC2) |
| BZ 111 | Animal Biology Laboratory (GT-SC1) |
| BZ 120 | Principles of Plant Biology (GT-SC1) |

Group B:

| LIFE 102 | Attributes of Living Systems (GT-SC1) |
| LIFE 103 | Biology of Organisms-Animals and Plants |

CHEM 111 General Chemistry I (GT-SC2) 3A
CHEM 112 General Chemistry Lab I (GT-SC1) 3A
CO 150 College Composition (GT-CO2) 1A

Select one from the following:

| MATH 155 | Calculus for Biological Scientists I (GT-MA1) |
| MATH 160 | Calculus for Physical Scientists I (GT-MA1) |

Arts and Humanities 3B
Historical Perspectives 3D
Elective 4

Total Credits 30

Sophomore

CHEM 113 General Chemistry II 3
CHEM 114 General Chemistry Lab II 1

Select two courses from the following:

| ATS 350 | Introduction to Weather and Climate |
| ESS 210/GR 210 | Physical Geography |
| GEO 122 | The Blue Planet: Geology of Our Environment (GT-SC2) |
| NR 130 | Global Environmental Systems (GT-SC2) |
| SOCR 240 | Introductory Soil Science |
| BZ 220 | Introduction to Evolution |

Select one group from the following:

| Group A: |
|---|---|
| CHEM 245 | Fundamentals of Organic Chemistry |
| CHEM 246 | Fundamentals of Organic Chemistry Laboratory |
Group B:
CHEM 341  Modern Organic Chemistry I
STAT 301 or 307  Introduction to Statistical Methods
Introduction to Biostatistics
Arts and Humanities
Social and Behavioral Sciences
Electives

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>3B</td>
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<td>3</td>
</tr>
<tr>
<td>2-6</td>
<td>2-6</td>
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</tbody>
</table>

Junior

Select one group from the following: 4-6
Group A:
BC 351  Principles of Biochemistry
Group B:
BC 401  Comprehensive Biochemistry I
BC 403  Comprehensive Biochemistry II
BZ 325  Plant Systematics
BZ 331  Developmental Plant Anatomy
BZ 440  Plant Physiology
BZ 441  Plant Physiology Laboratory

Students should take the following two courses only if CHEM 341 was selected in the sophomore year: 0-5
CHEM 343  Modern Organic Chemistry II
CHEM 344  Modern Organic Chemistry Laboratory

Select one group from the following: 10
Group A:
PH 121  General Physics I (GT-SC1)
PH 122  General Physics II (GT-SC1)
Group B:
PH 141  Physics for Scientists and Engineers I (GT-SC1)
PH 142  Physics for Scientists and Engineers II (GT-SC1)

Senior

BZ 310  Cell Biology

Select at least two courses from the following: 8
BZ 332  Introductory Phycology
BZ 333  Introductory Mycology
BZ 338  Comparative Morphology of Vascular Plants
BZ 350  Molecular and General Genetics
BZ 450  Plant Ecology

Advanced Writing
Global and Cultural Awareness
Electives\(^1\)

Total Credits 27-32

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>4A,4B</td>
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<td>3E</td>
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<td>2-7</td>
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<table>
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</table>

Program Total Credits: 120

\(^1\) Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
TO PREPARE FOR FIRST SEMESTER: The curriculum for the Biological Sciences major # Botany concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester.
Talk to your advisor. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). C or better in all biological, physical science, and mathematical courses used to meet requirements for the major. Term 4 may have to be adjusted if the student chooses 2 semesters of Organic Chemistry, do not attempt more than three science and math courses per term. Do not attempt BZ 310 and BZ 350 before Junior year. Do not take BZ 310 and BZ 350 together.

**Freshman**

**Semester 1**

<table>
<thead>
<tr>
<th>Critical</th>
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<tr>
<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
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<td></td>
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<tr>
<td>BZ 110 Principles of Animal Biology (GT-SC2)</td>
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<td>3A</td>
<td></td>
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<tr>
<td>BZ 111 Animal Biology Laboratory (GT-SC1)</td>
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<td>3A</td>
<td></td>
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<tr>
<td>Group B:</td>
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<tr>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
<td>3A</td>
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<tr>
<td>CO 150 College Composition (GT-CO2)</td>
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</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
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<td></td>
</tr>
<tr>
<td>Electives</td>
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<tr>
<td>MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.</td>
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**Semester 2**

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<td>Select one course from the following:</td>
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<tr>
<td>BZ 120 Principles of Plant Biology (GT-SC1)</td>
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<td>LIFE 103 Biology of Organisms-Animals and Plants</td>
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<td>CHEM 111 General Chemistry I (GT-SC2)</td>
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<td>3A</td>
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<td>CHEM 112 General Chemistry Lab I (GT-SC1)</td>
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<td>3A</td>
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<td>Select one course from the following:</td>
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<tr>
<td>MATH 155 Calculus for Biological Scientists I (GT-MA1)</td>
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<tr>
<td>MATH 160 Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
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<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>CO 150 must be completed by the end of Semester 2.</td>
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<tr>
<td>MATH 124, MATH 125 may be necessary for some students to fulfill pre-calculus requirements.</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
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**Sophomore**

**Semester 3**

<table>
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<tr>
<td>ATS 350 Introduction to Weather and Climate</td>
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<tr>
<td>ESS 210/GR 210 Physical Geography</td>
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<td>GEOL 122 The Blue Planet: Geology of Our Environment (GT-SC2)</td>
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<td>NR 130 Global Environmental Systems (GT-SC2)</td>
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<td>BZ 220 Introduction to Evolution</td>
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**Semester 4**

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<td>GEOL 120</td>
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<tr>
<td>NR 130</td>
<td>Global Environmental Systems (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>SOCR 240</td>
<td>Introductory Soil Science</td>
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Select one group from the following: 3-5

**Group A:**
- CHEM 245 | Fundamentals of Organic Chemistry X
- CHEM 246 | Fundamentals of Organic Chemistry Laboratory X

**Group B:**
- CHEM 341 | Modern Organic Chemistry I X

Select one course from the following: 3
- STAT 301 | Introduction to Statistical Methods X
- STAT 307 | Introduction to Biostatistics X

Social and Behavioral Sciences 3C 3

**Elective** 1-3

**Total Credits** 13-17

**Junior**

<table>
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<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<td>BC 401</td>
<td>Comprehensive Biochemistry I</td>
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<td>BZ 331</td>
<td>Developmental Plant Anatomy</td>
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</table>

To complete CHEM 341 series option: 0-5

- CHEM 343 | Modern Organic Chemistry II |
- CHEM 344 | Modern Organic Chemistry Laboratory |

Select one course from the following: 5

- PH 121 | General Physics I (GT-SC1) 3A |
- PH 141 | Physics for Scientists and Engineers I (GT-SC1) 3A |

STAT 301 or STAT 307 must be completed by the end of Semester 5. X

**Total Credits** 13-17

<table>
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<td>BC 403</td>
<td>Comprehensive Biochemistry II</td>
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<td>BZ 325</td>
<td>Plant Systematics</td>
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<td>BZ 440</td>
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<td>BZ 441</td>
<td>Plant Physiology Laboratory</td>
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Select one course from the following: 5

- PH 122 | General Physics II (GT-SC1) 3A |
- PH 142 | Physics for Scientists and Engineers II (GT-SC1) 3A |

**Total Credits** 14-17

**Senior**

<table>
<thead>
<tr>
<th>Semester 7</th>
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<tr>
<td>BZ 310</td>
<td>Cell Biology X</td>
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Select one course from the following: 4

- BZ 332 | Introductory Phycology |
- BZ 333 | Introductory Mycology |
- BZ 338 | Comparative Morphology of Vascular Plants |

Advanced Writing 2 3

**Electives** 2-4

**Total Credits** 13-15
Major in Zoology

Zoologists study animals—their origin, behavior, diseases, and life processes. Some experiment with live animals in controlled or natural surroundings while others study the structure and function of animal cells, tissues, and organ systems. Some zoologists go on to study veterinary medicine. Zoologists participate in research that has practical outcomes in farming, medicine, pharmacy, wildlife conservation, and pest control. Zoology encompasses many specialties. At CSU, students may focus on general training in animal biology or choose a concentration in the following areas: animal behavior, development, aquatic biology, ecology (how animals adapt to their environments), genetics and evolution, invertebrate organisms, cellular/molecular biology and physiology, systematics, and morphology of vertebrate organisms.

The curriculum is designed to provide a basic understanding of zoology through a variety of laboratory experiences in combination with the study of basic theories and defining concepts. The program encourages flexibility, strength, and depth. The course work includes a two-semester introductory biology sequence, one course each in invertebrates and vertebrates, and courses in evolution and ecology. Required courses in the physical sciences include a minimum of one year of introductory chemistry and at least one course in organic chemistry, two courses in physics (all with labs) and one in biochemistry. A course each in calculus and statistics is also required. In addition, students select a minimum of 15 credits of Zoology courses in their chosen areas of concentration.

Learning Outcomes

Students will:

- Interpret scientific data.
- Demonstrate strong organizational and laboratory skills.
- Define scientific hypotheses and design experiments to test them.
- Work effectively in groups.
- Demonstrate strong writing and oral communication skills.

Potential Occupations

This major prepares students to work in various areas of zoology, such as research or private industry, or to begin graduate school or professional studies. Career opportunities include medical biotechnology, research technician, protective agencies such as shelters and refuges, trainers and handlers, animal-related business, aquatic/marine biologists, exotic animal specialists, and wildlife conservation. It is an appropriate major for students planning to attend medical or veterinary school. Graduates often pursue advanced degrees to carry out basic research or advance into leadership positions in industry. Participation in internships, laboratory, or research opportunities is highly recommended and encouraged by the department to enhance practical training and development.

Additional careers for Zoology majors include, but are not limited to: aquarium and museum curator/director; zoo keeper, animal trainer and instructor, science librarian, environmental technician, fish and wildlife technician, veterinary technician/assistant, marine bacteriologist or biologist or ecologist, humane society positions, cytotechnologist, ecologist, fisheries biologist or conservationist, laboratory technician, marketing researcher, medical technologist, park ranger, pharmaceutical sales representative, production supervisor, quality analysis technician in food or pharmaceutical industry, radiation protection technician, research technician, industrial hygienist, wildlife photographer.

Requirements

Effective Fall 2015

To be qualified for graduation, students in the Zoology major must have a minimum grade of C- in each of their biological, physical science, and mathematical courses used to meet requirements for the major. This applies to courses taken as substitutions for meeting these requirements. The minimum scholastic average acceptable for graduation is 2.000 computed only for courses attempted at CSU.

### Semester 8

<table>
<thead>
<tr>
<th>Course</th>
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<td>BZ 332 Introductory Phycology</td>
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<td>BZ 333 Introductory Mycology</td>
<td>X</td>
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<tr>
<td>BZ 338 Comparative Morphology of Vascular Plants</td>
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<tr>
<td>BZ 350 Molecular and General Genetics</td>
<td>X</td>
<td>4A,4B</td>
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<td>BZ 450 Plant Ecology</td>
<td>X</td>
<td>4C</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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<tr>
<td>Elective</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits: 15-18

Program Total Credits: 120
BZ 120  Principles of Plant Biology (GT-SC1)  3A
Group B:
LIFE 102  Attributes of Living Systems (GT-SC1)  3A
LIFE 103  Biology of Organisms-Animals and Plants
CHEM 111  General Chemistry I (GT-SC2)  3A  4
CHEM 112  General Chemistry Lab I (GT-SC1)  3A  1
CO 150  College Composition (GT-CO2)  1A  3
Select one from the following:  4
MATH 155  Calculus for Biological Scientists I (GT-MA1)  1B
MATH 160  Calculus for Physical Scientists I (GT-MA1)  1B
Arts and Humanities  3B  3
Social and Behavioral Sciences  3C  3
Electives  5
Total Credits  31

Sophomore

BZ 212  Animal Biology-Invertebrates  4
BZ 214  Animal Biology-Vertebrates  4
BZ 220  Introduction to Evolution  3
CHEM 113  General Chemistry II  3
CHEM 114  General Chemistry Lab II  1
Select one group from the following:  3-5
Group A:
CHEM 245  Fundamentals of Organic Chemistry
CHEM 246  Fundamentals of Organic Chemistry Laboratory
Group B:
CHEM 341  Modern Organic Chemistry I
STAT 301 or 307  Introduction to Statistical Methods
Introduction to Biostatistics  3
Arts and Humanities  3B  3
Global and Cultural Awareness  3E  3
Historical Perspectives  3D  3
Total Credits  30-32

Junior

Select one from the following:  4-6
Group A:
BC 351  Principles of Biochemistry
Group B:
BC 401  Comprehensive Biochemistry I
BC 403  Comprehensive Biochemistry II
BZ 350  Molecular and General Genetics  4A,4B  4
Students should take the following two courses only if CHEM 341 was selected in the sophomore year:  0-5
CHEM 343  Modern Organic Chemistry II
CHEM 344  Modern Organic Chemistry Laboratory
Select one group from the following:  10
Group A:
PH 121  General Physics I (GT-SC1)  3A
PH 122  General Physics II (GT-SC1)  3A
Group B:
PH 141  Physics for Scientists and Engineers I (GT-SC1)  3A
PH 142  Physics for Scientists and Engineers II (GT-SC1)  3A
Upper-Division Zoology Courses (see list below)  
Electives  
Total Credits  29-36

Senior

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<tr>
<td>BZ 310</td>
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Upper-Division Zoology Courses (see list below)

Advanced Writing  2  3
Electives  1  2-11
Total Credits  21-30

Program Total Credits:  120

### Upper-Division Zoology Department List

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<td>BSPM 302</td>
<td>Applied and General Entomology</td>
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<td>BSPM 303A</td>
<td>Entomology Laboratory: General</td>
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<td>BSPM 462/</td>
<td>Parasitology and Vector Biology</td>
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<td>Animal Behavior</td>
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<td>BZ 311</td>
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<td>BZ 330</td>
<td>Mammalogy</td>
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<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
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<td>Global Change Ecology, Impacts and Mitigation</td>
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<td>BZ 401</td>
<td>Comparative Animal Physiology</td>
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<td>BZ 402</td>
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<td>Biological Basis of Animal Behavior</td>
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<td>Computer Analysis in Population Genetics</td>
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1 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

### Major Completion Map

**Distinctive Requirements for Degree Program:**

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for the Zoology major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre#calculation requirements in the first semester. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam). Earned grade of C or better is required in each of their biological, physical science, and mathematical courses used to meet requirements for the major. Term 5 may have to be adjusted if the student chooses 2 semesters of Organic Chemistry. Do not attempt BZ 310 and BZ 350 before Junior year. Do not take BZ 350 and BZ 310 together.
### Freshman

#### Semester 1

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Select one group from the following:

**Group A:**
- BZ 110 Principles of Animal Biology (GT-SC2) 3A
- BZ 111 Animal Biology Laboratory (GT-SC1) 3A

**Group B:**
- LIFE 102 Attributes of Living Systems (GT-SC1) 3A

CO 150 College Composition (GT-CO2) 1A 3

Social and Behavioral Sciences 3C 3

**Electives**

MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.

**Total Credits** 15

#### Semester 2

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Select one course from the following:

- BZ 120 Principles of Plant Biology (GT-SC1) 3A
- LIFE 103 Biology of Organisms-Animals and Plants
- CHEM 111 General Chemistry I (GT-SC2) X 3A 4
- CHEM 112 General Chemistry Lab I (GT-SC1) X 3A 1

Select one course from the following:

- MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B
- MATH 160 Calculus for Physical Scientists I (GT-MA1) 1B

**Arts and Humanities**

CO 150 must be completed by the end of Semester 2. X

MATH 124, MATH 125 may be necessary for some students to fulfill pre-calculus requirements.

**Total Credits** 16

### Sophomore

#### Semester 3

<table>
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<td>BZ 220</td>
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**Arts and Humanities**

3B 3

**Historical Perspectives**

3D 3

MATH 155 or MATH 160 must be completed by the end of Semester 3.

**Total Credits** 17

#### Semester 4

<table>
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</table>

Select one group from the following:

**Group A:**
- CHEM 245 Fundamentals of Organic Chemistry
- CHEM 246 Fundamentals of Organic Chemistry Laboratory

**Group B:**
- CHEM 341 Modern Organic Chemistry I

Select one course from the following:

- STAT 301 Introduction to Statistical Methods
- STAT 307 Introduction to Biostatistics

**Global and Cultural Awareness**

3E 3

**Total Credits** 13-15
## Minor in Botany

The minor in Botany is offered to provide interested students with maximum breadth and depth in botanical science utilizing a limited number of requirements. The program also serves to broaden the academic background of students seeking employment in the interdisciplinary job market associated with the plant sciences.

### Requirements

#### Effective Fall 2007

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<th>Code</th>
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<th>Credits</th>
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### Junior

#### Semester 5

Select one course from the following:
- BC 351 Principles of Biochemistry
- BC 401 Comprehensive Biochemistry I

To complete CHEM 341 series option:
- CHEM 343 Modern Organic Chemistry II
- CHEM 344 Modern Organic Chemistry Laboratory

Select one course from the following:
- PH 121 General Physics I (GT-SC1)
- PH 141 Physics for Scientists and Engineers I (GT-SC1)

Elective
Upper-Division Zoology Course (See List on Concentration Requirements Tab)

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### Semester 6

To complete BC 401 series option:
- BC 403 Comprehensive Biochemistry II
- BZ 350 Molecular and General Genetics

Select one course from the following:
- PH 122 General Physics II (GT-SC1)
- PH 142 Physics for Scientists and Engineers II (GT-SC1)

Elective
Upper-Division Zoology Course (See List on Concentration Requirements Tab)

<table>
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### Senior

#### Semester 7

- BZ 310 Cell Biology
- Advanced Writing
- Electives

Upper-Division Zoology Course (See List on Concentration Requirements Tab)

PH 121 must be completed by the end of Semester 7.

<table>
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<tr>
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### Semester 8

- LIFE 320 Ecology
- Electives

Upper-Division Zoology Courses (See List on Concentration Requirements Tab)

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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### Total Credits

<table>
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<th>Code</th>
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Program Total Credits: 120

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Select one group from the following:

<table>
<thead>
<tr>
<th>Group</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>BZ 120 Principles of Plant Biology (GT-SC1)</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>LIFE 103 Biology of Organisms-Animals and Plants</td>
<td>4</td>
</tr>
</tbody>
</table>

**Upper Division**

Minimum of 10 credits of BZ courses specified for the botany concentration.

A minimum of 7 additional credits from BZ courses or other courses approved by the department.

Total Credits: 21-25

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**Minor in Zoology**

The minor in Zoology is a useful complement to a major in animal science, fishery biology, geology, natural resource recreation and tourism, or wildlife biology.

**Requirements**

**Effective Fall 1983**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>Lower Division</td>
<td></td>
</tr>
<tr>
<td>BZ 212</td>
<td>Animal Biology-Invertebrates</td>
<td>4</td>
</tr>
<tr>
<td>BZ 214</td>
<td>Animal Biology-Vertebrates</td>
<td>4</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>4</td>
</tr>
<tr>
<td>LIFE 103</td>
<td>Biology of Organisms-Animals and Plants</td>
<td>4</td>
</tr>
</tbody>
</table>

**Upper Division**

Select a minimum of 12 credits in zoologically oriented courses from four of the seven following areas: animal behavior; aquatic biology; cell biology and physiology; ecology; genetics, evolution, and systematics; invertebrate organisms; vertebrate organisms.  

Total Credits: 28

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1 A list of zoologically-oriented courses in each area (specialties in zoology) is available from the department office.

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**Graduate Programs in Chemistry**

Master of Science and Doctor of Philosophy degree programs are offered in Analytical, Chemical Biology, Chemistry Education, Inorganic, Materials, Organic, and Physical Chemistry. Students interested in graduate work should refer to the Graduate and Professional Bulletin or contact the Department of Chemistry (http://www.chem.colostate.edu).

**Master Programs**

- Master of Science in Chemistry, Plan A*
- Master of Science in Chemistry, Plan B

**Ph.D.**

- Ph.D. in Chemistry*

* Please see department for program of study.

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**Courses**

**Chemistry (CHEM)**

**CHEM 103 Chemistry in Context (GT-SC2)**

Credits: 3 (3-0-0)

Course Description: Chemistry, chemical principles from more conceptual, less mathematical perspective; how chemical substances, chemical reactions affect our daily lives.

Prerequisite: None.

Registration Information: For students who do not plan to take additional courses in chemistry. Sections may be offered: Online.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Traditional.

Special Course Fee: No.

Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC2).

**CHEM 104 Chemistry in Context Laboratory (GT-SC1)**

Credit: 1 (0-2-0)

Course Description: Laboratory applications of principles covered in CHEM 103.

Prerequisite: CHEM 103, may be taken concurrently.

Registration Information: Sections may be offered: Online.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Traditional.

Special Course Fee: Yes.

Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).
CHEM 105  Problem Solving in General Chemistry  Credits: 2 (1-0-1)  
Course Description: Foundational problem-solving skills in general chemistry to support students for later success in general chemistry courses.  
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.  
Registration Information: Placement out of MATH 118. This is a partial semester course. Must register for lecture and recitation.  
Terms Offered: Fall, Spring.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.  

CHEM 107  Fundamentals of Chemistry (GT-SC2)  Credits: 4 (4-0-0)  
Course Description: Atomic/molecular theory, gases, liquids, solids, solutions, acid/base and oxidation/reduction reactions, kinetics, selected topics. Quantitative reasoning but with less focus on mathematical calculations than CHEM 111/CHEM 113.  
Prerequisite: MATH 117 or MATH 141, may be taken concurrently or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently.  
Registration Information: For students in science-related programs requiring one semester of general chemistry. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).  

CHEM 108  Fundamentals of Chemistry Laboratory (GT-SC1)  Credit: 1 (0-0-1)  
Course Description: Laboratory applications of principles presented in CHEM 107.  
Prerequisite: CHEM 107, may be taken concurrently.  
Registration Information: Credit not allowed for both CHEM 108 and CHEM 112.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).  

CHEM 111  General Chemistry I (GT-SC2)  Credits: 4 (3-0-1)  
Course Description: Fundamental aspects of chemistry and chemical principles; emphasis on structure, bonding, and stoichiometry.  
Prerequisite: (MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261) and (CHEM 105).  
Registration Information: CHEM 105 or an appropriate score in the CHEM preparation course. Must register for lecture and recitation. Intended for science majors. Students should complete the sequence CHEM 111, CHEM 112, CHEM 113, and CHEM 114. Credit allowed for only one of the following: CHEM 111, CHEM 107, or CHEM 117.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).  

CHEM 112  General Chemistry Lab I (GT-SC1)  Credit: 1 (0-3-0)  
Course Description: Laboratory applications of principles covered in CHEM 111.  
Prerequisite: CHEM 111, may be taken concurrently or CHEM 117, may be taken concurrently.  
Registration Information: Credit not allowed for both CHEM 112 and CHEM 108.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).  

CHEM 113  General Chemistry II Credits: 3 (3-0-0)  
Course Description: Acid/base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry, selected topics.  
Prerequisite: (CHEM 107 or CHEM 111 or CHEM 117) and (MATH 124 or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently or MATH 141).  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 114  General Chemistry Lab II Credit: 1 (0-3-0)  
Course Description: Laboratory applications of principles covered in CHEM 113.  
Prerequisite: CHEM 112 and CHEM 113, may be taken concurrently.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  

CHEM 115  General Chemistry II Recitation Credit: 1 (0-0-1)  
Course Description: Problem solving applied to topics in, e.g., acid/ base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry.  
Prerequisite: None.  
Registration Information: Must have concurrent registration in CHEM 113.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 117  General Chemistry I for Chemistry Majors Credits: 3 (3-0-0)  
Course Description: Fundamental aspects of chemistry and chemical principles, with an emphasis placed on atomic and molecular structure, bonding and stoichiometry.  
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.  
Registration Information: Must have concurrent registration in CHEM 192. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.
CHEM 192 Introductory Seminar in Chemistry  Credit: 1 (0-0-1)
Course Description: Small-group discussions of aspects of chemistry.
Prerequisite: None.
Registration Information: Must have concurrent registration in CHEM 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 245 Fundamentals of Organic Chemistry  Credits: 4 (4-0-0)
Course Description: Nomenclature, structure, bonding, reactions, mechanisms, synthesis, stereochemistry of organic compounds.
Prerequisite: CHEM 107 or CHEM 113.
Registration Information: Intended for students in science-related programs requiring one semester of organic chemistry. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 246 Fundamentals of Organic Chemistry Laboratory  Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles presented in CHEM 245.
Prerequisite: (CHEM 108 or CHEM 112 or CHEM 114) and (CHEM 245, may be taken concurrently).
Registration Information: Credit not allowed for students who have already taken CHEM 344.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 261 Fundamentals of Inorganic Chemistry  Credits: 3 (3-0-0)
Course Description: Preparation, structures, properties, and reactions of chemical elements and inorganic compounds; periodic trends, organizing principles; applications.
Prerequisite: CHEM 113, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 301 Advanced Scientific Writing--Chemistry (GT-CO3)  Credits: 3 (1-4-0)
Course Description: Advanced scientific writing using the read-analyze-write approach and scientific poster preparation and presentation.
Prerequisite: (CO 150) and (CHEM 334 or CHEM 345).
Registration Information: CHEM 334 or CHEM 345 or a 300-level science laboratory course with written approval of instructor; CO 150. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CHEM 311 Introduction to Nanoscale Science  Credits: 3 (3-0-0)
Course Description: Synthesis, characterization, and applications of nanoscale materials.
Prerequisite: (CHEM 113) and (CHEM 346 or CHEM 343).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 320 Chemistry of Addictions  Credits: 3 (3-0-0)
Course Description: Chemical processes of addiction; receptor binding, molecular deactivation, and feedback in the context of protein-substrate molecular interactions.
Prerequisite: CHEM 103 or CHEM 107 or CHEM 111.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 334 Quantitative Analysis Laboratory  Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles presented in CHEM 335.
Prerequisite: CHEM 114 and CHEM 335, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 338 Environmental Chemistry  Credits: 3 (3-0-0)
Course Description: Processes that control the fate of chemicals in the environment. Focus on the chemistry of the atmosphere, hydrosphere, and soils, especially as it pertains to pollution of these environmental compartments. Topics covered in the course may include smog and air pollution, ocean acidification, acid mine drainage, pesticide chemistry, and heavy metal contamination.
Prerequisite: (CHEM 113) and (CHEM 245 or CHEM 341).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 341 Modern Organic Chemistry I  Credits: 3 (3-0-0)
Course Description: Structures, nomenclature, dynamics, spectroscopy, and reactions of organic molecules.
Prerequisite: CHEM 113.
Registration Information: Credit allowed for only one of the following: CHEM 341, CHEM 245, and CHEM 345.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 343 Modern Organic Chemistry II  Credits: 3 (3-0-0)
Course Description: Continued studies of reactions and mechanisms of organic molecules and biological chemistry.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.
Registration Information: Credit not allowed for both CHEM 343 and CHEM 346.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 344  Modern Organic Chemistry Laboratory  Credits: 2 (0-6-0)
Course Description: Laboratory applications of modern organic chemistry.
Prerequisite: CHEM 114 and CHEM 343, may be taken concurrently.
Registration Information: Intended for science majors. Credit not allowed for both CHEM 344 and CHEM 246.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 345  Organic Chemistry I  Credits: 4 (3-3-0)
Course Description: Structure, nomenclature, dynamics, spectroscopy, reactions of organic molecules. Laboratory applications of principles presented in lecture.
Prerequisite: CHEM 113 and CHEM 114.
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345, CHEM 346. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 346  Organic Chemistry II  Credits: 4 (3-3-0)
Course Description: Continue studies of reactions and mechanisms of organic molecules. Laboratory applications of principles presented in lecture.
Prerequisite: CHEM 345.
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345 and CHEM 346. Credit not allowed for both CHEM 343 and CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 384  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CHEM 100 to 499 - at least 20 credits.
Registration Information: Written consent of department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, CHEM 498. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 431  Instrumental Analysis  Credits: 4 (3-3-0)
Course Description: Instrumental methods of chemical analysis.
Prerequisite: (CHEM 334) and (CBE 310, may be taken concurrently or CHEM 473, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 433  Clinical Chemistry  Credits: 3 (2-3-0)
Course Description: Principles and methodology of clinical chemistry. Laboratory experience in methodology and method development.
Prerequisite: (CHEM 334) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 440  Advanced Organic Chemistry Laboratory  Credits: 2 (0-6-0)
Course Description: Advanced techniques in organic synthesis, mechanisms of reactions, structure determination.
Prerequisite: CHEM 344 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 461  Inorganic Chemistry  Credits: 3 (3-0-0)
Course Description: Concepts, models to explain structural, spectroscopic, magnetic, thermodynamic, and kinetic properties of inorganic compounds; symmetry, group theory.
Prerequisite: (CHEM 261) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 462  Inorganic Chemistry Laboratory  Credits: 2 (0-6-0)
Course Description: Synthetic techniques and instrumental methods in inorganic chemistry.
Prerequisite: CHEM 461, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 473  Foundations of Physical Chemistry  Credits: 4 (4-0-0)
Course Description: Quantum chemistry; molecular structure and spectroscopy; equilibrium thermodynamics; kinetics.
Prerequisite: (CHEM 113) and (MATH 161 or MATH 255) and (PH 122 or PH 142).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 474  Physical Chemistry I  Credits: 3 (3-0-0)
Course Description: Quantum chemistry; applications to bonding, molecular structure, and spectroscopy.
Prerequisite: CHEM 113 and MATH 261 and PH 142.
Registration Information: Credit not allowed for both CHEM 473 and CHEM 474.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 475  Physical Chemistry Laboratory I  Credit: 1 (0-3-0)
Course Description: Physiochemical experiments; emphasis on quantum mechanics/spectroscopy; interpretation/presentation of data; formal lab reports.
Prerequisite: (CBE 310, may be taken concurrently or CHEM 473, may be taken concurrently or CHEM 474, may be taken concurrently) and (CHEM 334).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 476  Physical Chemistry II  Credits: 3 (3-0-0)
Course Description: Statistical thermodynamics; applications to phase and chemical equilibria; kinetics.
Prerequisite: CHEM 474.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 477 Physical Chemistry Laboratory II Credit: 1 (0-3-0)
Course Description: Physicochemical experiments; emphasis on thermodynamics/statistical mechanics/kinetics; interpretation/presentation of data; formal lab reports.
Prerequisite: CHEM 475.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Supervised work experience in approved off-campus chemical laboratory setting. Consultation with faculty adviser/instructor.
Prerequisite: CHEM 476.
Registration Information: Maximum of 12 credits allowed for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 493 Seminar Credits: 2 (0-0-2)
Course Description: Critical analysis of selected literature; develop presentation of technical topic; required oral presentation.
Prerequisite: CHEM 474.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Satisfactory completion of course requires a written report, an oral presentation at a research group meeting, or a poster presentation.
Prerequisite: CHEM 100 to 499 - at least 9 credits.
Registration Information: Written consent of laboratory mentor and department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Supervised laboratory research in chemistry; written report consistent with ACS guidelines required.
Prerequisite: CHEM 100 to 499 - at least 20 credits.
Registration Information: Written consent of research mentor and department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 511 Solid State Chemistry Credits: 3 (3-0-0)
Course Description: Physical and descriptive chemistry of solids including characterization and synthetic methods.
Prerequisite: CHEM 461 and CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 515 Polymer Chemistry Credits: 3 (3-0-0)
Course Description: Fundamentals of polymer chemistry: synthesis, characterization, physical properties.
Prerequisite: CHEM 346 and CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 517 Chemistry of Electronic Materials Credits: 3 (3-0-0)
Course Description: Chemical aspects of preparation and processing of materials in electronic devices, "molecular electronics," and nanostructured materials.
Prerequisite: CHEM 571, may be taken concurrently.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 521 Principles of Chemical Biology Credits: 3 (3-0-0)
Also Offered As: BC 521.
Course Description: Principles of chemical biology. Chemical methods for understanding and controlling the structure and function of biopolymers.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Registration Information: Credit not allowed for both CHEM 521 and BC 521.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 522 Methods of Chemical Biology Credits: 2 (2-0-0)
Course Description: Approaches to quantitative chemical biology, visualization, study and characterization of macromolecules and macromolecular-dependent processes.
Prerequisite: BC 351 with a minimum grade of B or BC 401 with a minimum grade of B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530A Advanced Topics in Chemical Analysis: Environmental Chemical Analysis Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530B Advanced Topics in Chemical Analysis: Absorption and Emission Spectroscopy Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530C Advanced Topics in Chemical Analysis: Bioanalytical Chemistry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530D Advanced Topics in Chemical Analysis: Statistical Analysis in Analytical Chemistry Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 530E  Advanced Topics in Chemical Analysis: Mass Spectrometry  Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 530F  Advanced Topics in Chemical Analysis: Analysis of Materials  Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 431, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 532  Advanced Chemical Analysis II  Credits: 3 (3-0-0)
Course Description: Advanced optics; instrumentation and methodology for analytical spectroscopy; computer applications.
Prerequisite: CHEM 431.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 533  Chemical Separations  Credits: 3 (3-0-0)
Course Description: Fundamentals and applications of chemical separations.
Prerequisite: CHEM 335 and CHEM 431.
Terms Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 537  Electrochemical Methods  Credits: 3 (3-0-0)
Course Description: Theory and methods of electrochemistry; applications of modern electrochemical techniques.
Prerequisite: CHEM 431.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539A  Principles of NMR and MRI: Basic NMR Principles  Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539B  Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI  Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539C  Principles of NMR and MRI: Advanced NMR and MRI Techniques  Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 541  Organic Molecular Structure Determination  Credits: 2 (2-0-0)
Course Description: Determination of organic molecular structure by spectroscopic methods.
Prerequisite: CHEM 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 543  Structure/Mechanisms in Organic Chemistry  Credits: 2 (2-0-0)
Course Description: Structure including stereochemistry and conformational isomerism; reactivity and mechanisms in organic chemistry.
Prerequisite: CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 545  Synthetic Organic Chemistry I  Credits: 3 (3-0-0)
Course Description: Reactions and synthesis in organic chemistry.
Prerequisite: CHEM 543.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 547  Physical Organic Chemistry  Credits: 3 (3-0-0)
Course Description: Mechanisms, theory, kinetics, and thermodynamics.
Prerequisite: CHEM 543.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 548  Organometallics in Synthesis  Credits: 2 (2-0-0)
Course Description: Fundamental aspects of organometallic chemistry applied to organic synthesis.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 549  Synthetic Organic Chemistry II  Credits: 2 (2-0-0)
Course Description: Strategies for the total synthesis of natural products.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550A  Materials Chemistry: Hard Materials  Credit: 1 (1-0-0)
Course Description: Structure and bonding; crystallography; properties; synthesis; characterization of metals, semiconductors, and network solids.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550B  Materials Chemistry: Soft Materials  Credit: 1 (1-0-0)
Course Description: Structure and bonding, mechanisms, properties, applications, synthesis, characterization of polymers, complex fluids, and biomaterials.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 550C Materials Chemistry: Nanomaterials Credit: 1 (1-0-0)
Course Description: Structure and bonding, synthesis, properties, characterization of carbon nanotubes, metal and semiconductor nanocrystals, and nanocomposites.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 551 Organometallic Chemistry Credits: 3 (3-0-0)
Course Description: Descriptive and mechanistic organometallic chemistry applied to homogeneous catalysis and organic synthesis.
Prerequisite: CHEM 346.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 555 Chemistry of Sustainability Credits: 3 (3-0-0)
Course Description: The central role of chemistry for achieving sustainability in key areas including chemicals and materials, energy, and environment.
Prerequisite: (BC 411 or CBE 310 or CHEM 476) and (CHEM 343 or CHEM 346).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 560 Foundations of Inorganic Synthesis Credit: 1 (1-0-0)
Course Description: Preparation for advanced studies in metal-mediated chemistry; essential aspects of inorganic structure, thermodynamics and reactivity
Prerequisite: CHEM 461.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 561 Inorganic Synthesis Credits: 2 (2-0-0)
Course Description: Chemistry of compounds of representative elements and transition metals.
Prerequisite: CHEM 560, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563A Physical Methods in Inorganic Chemistry: Group Theory Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563B Physical Methods in Inorganic Chemistry: Vibrational Spectroscopy Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563C Physical Methods in Inorganic Chemistry: Electronic Structure and Magnetism Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563D Physical Methods in Inorganic Chemistry: Magnetic Spectroscopies Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563E Physical Methods in Inorganic Chemistry: Advanced Nuclear Magnetic Resonance Spectroscopy Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563F Physical Methods in Inorganic Chemistry: Other Structural Methods Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 565 Inorganic Mechanisms Credits: 3 (3-0-0)
Course Description: Fundamental tools, key principles, selected classic case histories of inorganic and organometallic mechanistic chemistry, emphasizing kinetic methods.
Prerequisite: CHEM 476.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 566 Bioinorganic Chemistry Credits: 3 (3-0-0)
Course Description: Biological-inorganic chemistry, including key principles, prototype systems, classic papers, and problems.
Prerequisite: CHEM 461.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 567 Crystallographic Computation Credit: 1 (1-0-0)
Course Description: Theory and practice of structural computations using single crystal X-ray diffraction data.
Prerequisite: CHEM 474 with a minimum grade of C-.
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Registration Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 569</td>
<td>Chemical Crystallography</td>
<td>3 (3-0-0)</td>
<td>Theory and practice of determination of crystal and molecular structure by single crystal X-ray and neutron diffraction.</td>
<td>CHEM 474.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial-semester course.</td>
</tr>
<tr>
<td>CHEM 570</td>
<td>Chemical Bonding</td>
<td>3 (3-0-0)</td>
<td>Electronic structure methods; chemical bonding models; intermolecular interactions.</td>
<td>CBE 310 or CHEM 474.</td>
<td>Fall (even years)</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial-semester course.</td>
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<tr>
<td>CHEM 571A</td>
<td>Quantum Chemistry: Foundations</td>
<td>2 (2-0-0)</td>
<td>Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.</td>
<td>CHEM 571A, may be taken concurrently.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial-semester course.</td>
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<tr>
<td>CHEM 571B</td>
<td>Quantum Chemistry: Electronic Structure</td>
<td>1 (1-0-0)</td>
<td>Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.</td>
<td>CHEM 571A.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial-semester course.</td>
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<tr>
<td>CHEM 573A</td>
<td>Chemical Spectroscopy: Interactions of Light and Matter</td>
<td>1 (1-0-0)</td>
<td>Introduction to the fundamentals of spectroscopies used in chemical analysis from the perspective of time dependent quantum mechanics. Time-dependent perturbation theory, absorption and emission of radiation, two-level systems, and electronic, vibrational and rotational transitions.</td>
<td>CHEM 571A.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial semester course.</td>
</tr>
<tr>
<td>CHEM 573B</td>
<td>Chemical Spectroscopy: Electromagnetic Fields in Practice</td>
<td>1 (1-0-0)</td>
<td>Foundation in electromagnetic fields used in chemical spectroscopy. Dispersion and phase, the measurement of electromagnetic fields, properties of short optical pulses, and modulating electromagnetic fields.</td>
<td>CHEM 431.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial semester course.</td>
</tr>
<tr>
<td>CHEM 573C</td>
<td>Chemical Spectroscopy: Condensed Phase Spectroscopy</td>
<td>2 (2-0-0)</td>
<td>Foundations of spectroscopic measurements conducted on condensed phase chemical systems. Use of quantum mechanics and statistical mechanics to describe Response Theory, density matrix formalism, correlation functions, line shapes and spectral fluctuations, response functions, and the use of polarization in spectroscopy.</td>
<td>CHEM 571A and CHEM 576.</td>
<td>Fall (even years)</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial semester course.</td>
</tr>
<tr>
<td>CHEM 573D</td>
<td>Chemical Spectroscopy: Nonlinear Spectroscopy</td>
<td>2 (2-0-0)</td>
<td>Foundations of multidimensional spectroscopic measurements conducted on chemical systems.</td>
<td>CHEM 573A and CHEM 573C.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial semester course.</td>
</tr>
<tr>
<td>CHEM 573E</td>
<td>Chemical Spectroscopy: Spectroscopic Instrumentation</td>
<td>1 (1-0-0)</td>
<td>Instrumentation used to carry out spectroscopic measurements in chemistry research. Lasers and other light sources, optics, and detectors, spectroscopic techniques, and electronic and digital interfacing specific to spectroscopic instrumentation.</td>
<td>CHEM 431.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial semester course.</td>
</tr>
<tr>
<td>CHEM 573F</td>
<td>Chemical Spectroscopy: Computational Spectroscopy</td>
<td>1 (1-0-0)</td>
<td>Theory and computational techniques to compute and analyze molecular spectra, including aspects of quantum mechanics and statistical mechanics. Emphasis on implementation and computation of molecular spectra.</td>
<td>CHEM 571A and CHEM 571B and CHEM 575 and CHEM 576.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial semester course.</td>
</tr>
<tr>
<td>CHEM 575</td>
<td>Fundamentals of Chemical Thermodynamics</td>
<td>1 (1-0-0)</td>
<td>Fundamental thermodynamic concepts and some applications to chemical problems.</td>
<td>CBE 310 or CHEM 476 or PH 361.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial-semester course.</td>
</tr>
<tr>
<td>CHEM 576</td>
<td>Statistical Mechanics</td>
<td>2 (2-0-0)</td>
<td>Principles of statistical mechanics with applications to chemical systems.</td>
<td>CHEM 575, may be taken concurrently.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
<td>This is a partial-semester course.</td>
</tr>
</tbody>
</table>
CHEM 577  Surface Chemistry  Credits: 3 (3-0-0)
Course Description: Capillarity; interfacial thermodynamics, electrical aspects of surface chemistry, absorbed layers.
Prerequisite: CBE 310 or CHEM 476.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578A  Computational Chemistry: Electronic Structure  Credit: 1 (1-0-0)
Course Description: Electronic structure calculations of energetic and structural properties of molecules and chemical reactions.
Prerequisite: CHEM 571A and CHEM 571B.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578B  Computational Chemistry: Molecular Dynamics  Credit: 1 (1-0-0)
Course Description: Molecular Dynamics simulations of liquids to compute static and time dependent properties. Applications include biological and materials chemistry.
Prerequisite: CHEM 576.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 579  Chemical Kinetics  Credits: 3 (3-0-0)
Course Description: Elementary reactions, unimolecular reactions, reactions in solution, gas phase ion chemistry, photochemistry, and kinetic modeling.
Prerequisite: CBE 310 or CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 601  Responsible Conduct in Chemistry Research  Credit: 1 (1-0-0)
Course Description: Appropriate conduct in research, publishing, intellectual property decisions, job hunting, and negotiating; social responsibilities of scientists.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 641  Organic Reaction Mechanisms  Credits: 2 (2-0-0)
Course Description: Organic reaction mechanisms, including using arrows to show electron movement; heterolytic, radical, and pericyclic reactions.
Prerequisite: CHEM 545.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651A  Special Topics in Chemistry: Analytical Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651B  Special Topics in Chemistry: Inorganic Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651C  Special Topics in Chemistry: Organic Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651D  Special Topics in Chemistry: Physical Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651E  Special Topics in Chemistry: Materials Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in materials chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651F  Special Topics in Chemistry: Chemical Biology  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemical biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651G  Special Topics in Chemistry: Chemistry Education  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemistry education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651H  Special Topics in Chemistry: Physical Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in physics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651I  Special Topics in Chemistry: Analytical Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in analytical chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651J  Special Topics in Chemistry: Inorganic Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in inorganic chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651K  Special Topics in Chemistry: Organic Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in organic chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651L  Special Topics in Chemistry: Physical Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in physical chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651M  Special Topics in Chemistry: Materials Chemistry  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in materials chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651N  Special Topics in Chemistry: Chemical Biology  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemical biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651O  Special Topics in Chemistry: Chemistry Education  Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemistry education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 698 Research Credits: Var[1-9] (0-0-0)
Course Description: Graduate research in chemistry for students who do not plan to write an M.S. thesis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing in chemistry.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 699 Thesis Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 702 Independent Research Proposal Credit: 1 (0-0-1)
Course Description: Preparation, submission, and defense of an independent research proposal; creative and original thinking about research problems in modern chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. candidacy.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 750 Methods of Chemistry Laboratory Instruction Credit: 1 (1-0-0)
Course Description: Basic materials, methods, and skill development related to teaching undergraduate chemistry laboratory courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

CHEM 751 Advanced Chemical Instruction Credit: 1 (0-0-1)
Course Description: Advanced materials, methods, and presentation skills development related to teaching undergraduate chemistry courses.
Prerequisite: CHEM 571.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 753 Independent Study Credit: Var[1-5] (0-0-0)
Course Description: AIM-Related Independent Study for prospective graduate students who are not planning to enroll in the graduate chemistry program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 754 Independent Study Credit: Var[1-5] (0-0-0)
Course Description: AIM-Related Independent Study for prospective graduate students who are not planning to enroll in the graduate chemistry program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 755 Independent Study: Inorganic Chemistry Credit: Var[1-5] (0-0-0)
Course Description: AIM-Related Independent Study for prospective graduate students who are not planning to enroll in the graduate chemistry program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 756 Independent Study: Analytical Chemistry Credit: Var[1-5] (0-0-0)
Course Description: AIM-Related Independent Study for prospective graduate students who are not planning to enroll in the graduate chemistry program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 759 Independent Study: Biological Chemistry Credit: Var[1-5] (0-0-0)
Course Description: AIM-Related Independent Study for prospective graduate students who are not planning to enroll in the graduate chemistry program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 760 Independent Study: Physical Chemistry Credit: Var[1-5] (0-0-0)
Course Description: AIM-Related Independent Study for prospective graduate students who are not planning to enroll in the graduate chemistry program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 761 Dissertation Credit: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Chemistry

Chemists study the atomic and molecular structure of physical matter and analyze how it changes. More specifically, they investigate how basic atomic and molecular components are combined and can be manipulated to produce useful or improved products. They also develop methods to measure atomic and molecular properties and their interactions enabling insight into a range of processes from mining to clinical diagnostics. Chemistry majors develop a solid foundation in general chemistry and mathematics followed by course work in organic chemistry, analytical chemistry, physical chemistry, inorganic chemistry, biochemistry, and
Physics. The curriculum is rounded out by courses in the liberal and communications arts.

Chemistry majors are encouraged to participate in undergraduate research. Ample opportunities exist for undergraduate students to become involved in ground-breaking research in the laboratories of individual faculty members. Students have access to state-of-the-art equipment in faculty laboratories and in the Central Instrument Facility including NMR, FTIR, UV/Vis, fluorescence, and mass spectrometers, vacuum lines, x-ray diffractometers and many more. Undergraduate research is strongly encouraged for any student considering a career in chemistry and many students complete supervised research for academic credit.

**Learning Outcomes**

Chemistry students will:

- Organize, critically evaluate, and present chemical information coherently through oral and written discourse
- Upon obtaining a Bachelor of Science degree in chemistry, demonstrate contemporary skills and knowledge necessary for entry-level positions in chemical industry and allied fields, or for admission to a graduate or professional school
- Demonstrate original research skills, namely the ability to plan investigations allowing them to resolve research questions, conduct such theoretical and/or laboratory experimentation, solve problems arising in such situations and interpret and communicate results

**Potential Occupations**

Chemists are employed in a vast array of professional fields in private industry, government, and education. Chemists work in research and development, analysis and testing, consulting, industrial quality control and assurance, environmental resource management, and forensics. Principal employers are petrochemical firms, biotechnology firms, consumer chemical firms, environmental testing laboratories, pharmaceutical companies, agricultural companies, governmental regulatory agencies, governmental and educational research laboratories, and manufacturing firms. Many chemists are also engaged in startup companies. Chemistry is also an excellent major for those preparing for careers in veterinary medicine and the health professions. Students whose career goals involve teaching at the secondary school level have the opportunity to complete the teacher licensure program through the School of Education (http://soe.chhs.colostate.edu).

Many possible occupations for chemists include, but are not limited to: agricultural chemist, air and water quality analyst, biochemical technician, chemical sales and marketing representative, clinical chemist, consultant, educator, forensic analyst, laboratory technician/bench chemist, materials analyst, patent examiner, pharmaceutical chemist, polymer technician, technical writer, and toxicologist.

**Concentrations**

- ACS Certified Concentration
- Non-ACS Certified Concentration

**Major in Chemistry, ACS Certified Concentration**

Students who wish to work as professional chemists should select the ACS Certified Concentration to obtain professional certification by the American Chemical Society. The ACS-approved curriculum comprising this concentration offers an extensive and rigorous chemistry education that gives students intellectual, experimental, and communication skills to become effective chemistry professionals.

**Requirements**

**Effective Fall 2015**

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

Chemistry majors must achieve a minimum grade of C- in all the listed courses required for the major in chemistry.

**Freshman**

Select one group from the following:

<table>
<thead>
<tr>
<th>Group A:</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 111 General Chemistry I (GT-SC2)</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td><strong>Group B:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 117 General Chemistry I for Chemistry Majors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 192 Introductory Seminar in Chemistry</td>
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<td></td>
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<tr>
<td>CHEM 112 General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 113 General Chemistry II</td>
<td></td>
<td>3</td>
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<tr>
<td>CHEM 114 General Chemistry Lab II</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>MATH 160 Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>MATH 161 Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td>3A</td>
<td>4</td>
</tr>
</tbody>
</table>
### Sophomore

<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 261</td>
<td>Fundamentals of Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 334</td>
<td>Quantitative Analysis Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 335</td>
<td>Introduction to Analytical Chemistry</td>
<td>4A</td>
</tr>
<tr>
<td>CHEM 345</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 346</td>
<td>Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>4</td>
</tr>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>STAT 301 or 315</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Statistics for Engineers and Scientists</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits: 30**

### Junior

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 351 or 401</td>
<td>Principles of Biochemistry</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Comprehensive Biochemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 440</td>
<td>Advanced Organic Chemistry Laboratory</td>
<td>4B</td>
</tr>
<tr>
<td>CHEM 474</td>
<td>Physical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 475</td>
<td>Physical Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 476</td>
<td>Physical Chemistry II</td>
<td>4B</td>
</tr>
<tr>
<td>CHEM 477</td>
<td>Physical Chemistry Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits: 32**

### Senior

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 431</td>
<td>Instrumental Analysis</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 461</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 462</td>
<td>Inorganic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 493</td>
<td>Seminar</td>
<td>4C</td>
</tr>
<tr>
<td>Advanced Science Electives</td>
<td></td>
<td>7-8</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits: 29-30**

**Program Total Credits:** 120

1. Select from the list of courses in category 3A of the All-University Core Curriculum (AUCC) with BZ or LIFE subject codes. Must include a laboratory.
2. Select additional advanced science courses (upper-division, 300- to 400-level) to make a total of at least 11 credits when combined with the choice of BC 351 or BC 401 in the junior year.
3. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

### Major Completion Map

The Major Completion Map for this concentration will be published in the 17-18 General Catalog. Students should consult with their Advisor or visit the Department for the current Major Completion Map requirements.
Major in Chemistry, Non-ACS Certified Concentration

Students may also opt to complete the non-ACS Certified Concentration. This concentration provides a more flexible, yet comprehensive chemistry curriculum for students and can be attractive when pursuing professions for which chemistry is not the major focus.

### Requirements

Effective Fall 2015

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

Chemistry majors must achieve a minimum grade of C- in all the listed courses required for the major in chemistry.

#### Freshman

<table>
<thead>
<tr>
<th>Group A:</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 117</td>
<td>General Chemistry I for Chemistry Majors</td>
<td></td>
</tr>
<tr>
<td>CHEM 192</td>
<td>Introductory Seminar in Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
<td></td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td><strong>Arts and Humanities</strong></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td><strong>Biological and Physical Sciences</strong></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td><strong>Electives</strong></td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

#### Sophomore

| CHEM 261 | Fundamentals of Inorganic Chemistry | |
| CHEM 334 | Quantitative Analysis Laboratory | |
| CHEM 335 | Introduction to Analytical Chemistry | 4A |
| CHEM 345 | Organic Chemistry I | |
| CHEM 346 | Organic Chemistry II | |
| MATH 261 | Calculus for Physical Scientists III | |
| PH 141 | Physics for Scientists and Engineers I (GT-SC1) | 3A |
| PH 142 | Physics for Scientists and Engineers II (GT-SC1) | 3A |
| **Historical Perspectives** | | 3D |
| **Total Credits** | | 32 |

#### Junior

| CHEM 440 or 462 | Advanced Organic Chemistry Laboratory | |
| CHEM 474 | Physical Chemistry I | |
| CHEM 475 | Physical Chemistry Laboratory I | |
| CHEM 476 | Physical Chemistry II | 4B |
| **Advanced Science Electives** | | 3 |
| **Mathematics-Based Requirement** | | |
| **Advanced Writing** | | 2 |
| **Arts and Humanities** | 3B | 3 |
| **Social and Behavioral Sciences** | 3C | 3 |
Electives

Student

Total Credits

Graduate courses in chemistry and other disciplines 1 12-15
CHEM 751 Methods of Chemistry Laboratory Instruction 1
CHEM 784 Supervised College Teaching 1
CHEM 793 Seminar 2
Electives 2-5
CHEM 698 Research 2 9
Total Credits 30

A minimum of 30 credits are required to complete this program.

Additional Requirements

• Incoming students must demonstrate undergraduate proficiency in analytical, inorganic, organic, and physical chemistry by having received (at their undergraduate institution) or by receiving (upon matriculation at CSU) a B- in the appropriate undergraduate course(s) or by passing an exam in the aforementioned subjects administered by the chemistry department, or by any combination of these ways to demonstrate undergraduate proficiency in the four subjects.

• Students must pass 2 cumulative exams, or the equivalent 2, which are given monthly 9 times each year, in no more than 12 attempts.

• Students must pass a faculty-refereed scientific presentation. Students may fulfill this requirement in one of three ways:
  • Students may give a public seminar based on the scientific literature;
  • Students may give a public seminar based on their thesis research;
  • Students may pass the Preliminary Oral Exam for the Ph.D. degree.

1 Select from the list of courses in category 3A of the All-University Core Curriculum (AUCC) with BZ or LIFE subject codes. Must include a lab.
2 Additional mathematics: 300-level MATH, CS, or STAT course.
3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). At least 4 credits must be upper-division to meet the minimum requirement of 42 upper-division credits.

Major Completion Map

The Major Completion Map for this concentration will be published in the 17-18 General Catalog. Students should consult with their Advisor or visit the Department for the current Major Completion Map requirements.

Master of Science in Chemistry, Plan B

Effective Summer 2010

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>Graduate courses in chemistry and other disciplines 1</td>
<td>12-15</td>
</tr>
<tr>
<td>CHEM 751</td>
<td>Methods of Chemistry Laboratory Instruction</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 784</td>
<td>Supervised College Teaching</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 793</td>
<td>Seminar</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>CHEM 698</td>
<td>Research 2</td>
<td>9</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

A minimum of 30 credits are required to complete this program.

Additional Requirements

• Incoming students must demonstrate undergraduate proficiency in analytical, inorganic, organic, and physical chemistry by having received (at their undergraduate institution) or by receiving (upon matriculation at CSU) a B- in the appropriate undergraduate course(s) or by passing an exam in the aforementioned subjects administered by the chemistry department, or by any combination of these ways to demonstrate undergraduate proficiency in the four subjects.

• Students must pass 2 cumulative exams, or the equivalent 2, which are given monthly 9 times each year, in no more than 12 attempts.

• Students must pass a faculty-refereed scientific presentation. Students may fulfill this requirement in one of three ways:
  • Students may give a public seminar based on the scientific literature;
  • Students may give a public seminar based on their thesis research;
  • Students may pass the Preliminary Oral Exam for the Ph.D. degree.

1 Select courses with advisor approval according to department guidelines.
2 Additional mathematics: 300-level MATH, CS, or STAT course.
3 See instructions available from the chemistry department.

Minor in Chemistry

The Chemistry Department offers a minor in Chemistry to interested students from other disciplines. The program serves to broaden the academic background of students seeking employment in fields related to chemistry.

Requirements

Effective Fall 2010

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower Division</td>
<td></td>
</tr>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Upper Division</td>
<td></td>
</tr>
<tr>
<td>Students must take 15 upper-division chemistry credits from at least two different areas of chemistry - analytical, inorganic, organic, and physical 1,2,3</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

1 Choose either 15 upper-division chemistry credits or CHEM 261 plus 12 credits from 300-level and above chemistry courses.
At least two of these courses must include a laboratory component (which cannot be fulfilled by CHEM 384, CHEM 487, CHEM 493, CHEM 495, or CHEM 498).

Three of these 15 credits may be fulfilled by CHEM 384, CHEM 487, CHEM 493, CHEM 495, or CHEM 498.

Department of Computer Science

Office in Computer Science Building, Room 279
(970) 491-5792
cs.colostate.edu (http://www.cs.colostate.edu)

Professor L. Darrell Whitley, Chair

Undergraduate

Majors

• Major in Computer Science
• Major in Applied Computing Technology
  • Human-Centered Computing Concentration
  • Computing Education Concentration
  • Computing Technology Concentration

Minors

• Minor in Computer Science

Graduate

Graduate Programs in Computer Science

Master of Science, Master of Computer Science, and Doctor of Philosophy degree programs in Computer Science. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Computer Science (http://www.cs.colostate.edu).

Master Programs

• Master of Science in Computer Science, Plan A
• Master of Science in Computer Science, Plan B*
• Master of Computer Science, Plan C (M.C.S.)

Ph.D.

• Ph.D. in Computer Science*

* Please see department for program of study.

Courses

Subjects in this department include: Computer Science (CS) and Computing Technology (CT).
CS 158 Mathematical Algorithms in C  Credit: 1 (0-2-0)
Also Offered As: MATH 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 118 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following courses: CS 158, MATH 158, MATH 158E.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 160 Foundations in Programming  Credits: 4 (3-2-0)
Course Description: Introduction to computer theory, programming and systems. Sets, functions, logic. Procedural programming in Java. Computer and data models.
Prerequisite: MATH 118 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 161 Object-Oriented Problem Solving  Credits: 4 (3-2-0)
Course Description: Fundamental object-oriented concepts, inheritance, polymorphism, basic algorithms, linked lists, assertions, recursion, induction, counting.
Prerequisite: (CS 160 with a minimum grade of C) and (MATH 141, may be taken concurrently or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 163 Java (CS1) No Prior Programming  Credits: 4 (3-2-0)
Course Description: Computer programming in Java for students without previous programming experience. Topics include variables, assignment, expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 164 Java (CS1) Prior Programming  Credits: 4 (3-2-0)
Course Description: Computer programming in Java for students with limited programming experience. Problem decomposition for good design; expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 165 Java (CS2) Data Structures and Algorithms  Credits: 4 (3-2-0)
Course Description: Object oriented concepts, assertions, inheritance, polymorphism, algorithms and data structures using Java.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C) and (MATH 160 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 192 First-Year Seminar-Computer Science  Credits: 2 (0-0-2)
Course Description: Introduction to the computer science major; basic computer skills; campus resources, and various subject-specific topics.
Prerequisite: None.
Registration Information: Computer science majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 200 Algorithms and Data Structures  Credits: 4 (3-2-0)
Course Description: Data structures; abstract data types; algorithm correctness; complexity analysis; sorting, searching, hashing.
Prerequisite: (CS 161 with a minimum grade of C) and (MATH 141 with a minimum grade of C or MATH 155 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 220 Discrete Structures and their Applications  Credits: 4 (3-0-1)
Course Description: Integer representations and properties, propositions, predicates, sets, functions, program proofs, induction, counting, complexity; Python implementations of these concepts.
Prerequisite: (CS 165 with a minimum grade of C) and (MATH 160 with a minimum grade of C).
Registration Information: Must register for lecture and recitation. Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 253 Software Development with C++  Credits: 4 (3-0-1)
Course Description: Developing and modifying large software. Relating programming language to its machine implementation. C++ programming for experienced programmers.
Prerequisite: (CS 200 with a minimum grade of C) and (CS 270 with a minimum grade of C or ECE 251 with a minimum grade of C).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CS 270 Computer Organization Credits: 4 (3-2-0)
Course Description: Data representation, arithmetic, assembly and C language, digital logic and systems, Boolean algebra, circuits, CPU and memory models, state machines.
Prerequisite: (CS 161 with a minimum grade of C and CS 200, may be taken concurrently) and (MATH 141 with a minimum grade of C or MATH 155 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 295 Independent Study Credits: Var[1-4] (0-0-0)
Course Description: Investigation of special topics under direction of computer science faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 314 Software Engineering Credits: 3 (3-0-0)
Course Description: Methods used to develop large-scale software projects in industry emphasizing design, implementation, and testing.
Prerequisite: CS 253 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 320 Algorithms—Theory and Practice Credits: 3 (3-0-0)
Course Description: Analysis, design, implementation and applications of algorithms.
Prerequisite: (CS 200 with a minimum grade of C and MATH 161 with a minimum grade of C) and (MATH 229 with a minimum grade of C or MATH 369 with a minimum grade of C).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 325 Introduction to Analysis of Algorithms Credits: 4 (3-0-1)
Course Description: Efficiency analysis, correctness proofs, design strategies, illustrations from domains such as graph theory, scheduling and optimization, geometry.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 330 Database Systems Credits: 4 (3-2-0)
Course Description: Database analysis, design, administration, implementation, hierarchical, network relational models; data sublanguages; query facilities.
Prerequisite: CS 314 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 335 Introduction to Bioinformatics Algorithms Credits: 4 (3-2-0)
Course Description: Algorithms for analysis of large scale biological data.
Prerequisite: CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 340 Introduction to Object-Oriented Design Credits: 4 (3-3-0)
Course Description: Object-oriented methods for large-scale software systems. Software design for reuse using patterns. WWW applications in languages, e.g., Java.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CS 440 Introduction to Artificial Intelligence Credits: 4 (3-2-0)
Course Description: Concepts, representations, and algorithms for applications of problem solving search, logical reasoning and machine learning.
Prerequisite: CS 253 with a minimum grade of C and CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 453 Introduction to Compiler Construction Credits: 4 (3-0-1)
Course Description: Functional components of a compiler: modules, interfaces, lexical and syntax analysis, error recovery, resource allocation, code generation.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 454 Principles of Programming Languages Credits: 4 (3-3-0)
Course Description: Language design concepts; functional programming; interpreter support for environments, procedures, recursion, types, objects; language paradigms.
Prerequisite: CS 253 with a minimum grade of C and CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 455 Introduction to Distributed Systems Credits: 4 (3-2-0)
Course Description: Distributed systems including model of distributed computations; concurrency; thread pools and scalable servers; distributed mutual exclusion; cloud computing; distributed graph algorithms; data representation formats; atomic transactions; large-scale storage systems; distributed shared memory; and overlays.
Prerequisite: CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. CS majors and minors only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 457 Computer Networks and the Internet Credits: 4 (3-3-0)
Course Description: Principles of communications, local area networks, communication protocols, TCP/IP, and the Internet.
Prerequisite: (CS 370 with a minimum grade of C and CS 253 with a minimum grade of C) and (STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or ECE 303 with a minimum grade of C or STAT 307 with a minimum grade of C or CS 311 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 464 Principles of Human-Computer Interaction Credits: 4 (3-2-0)
Course Description: History and trends in human-computer interaction; user-centered design techniques; prototyping; experimental methods for the evaluation of technology.
Prerequisite: CS 253 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 470 Computer Architecture Credits: 4 (3-2-0)
Course Description: Instruction set; hardwired, microprogramming; memory; arithmetic; I/O and buses; performance evaluation; pipelining, RISC.
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 475 Parallel Programming Credits: 4 (3-3-0)
Course Description: Parallel programming techniques for shared-memory and message-passing systems; process synchronization, communication; example languages.
Prerequisite: CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 486 Practicum Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in approved computer science setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Must register for lecture and laboratory. Computer science majors only. Written consent of instructor. Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 498 Research Credits: Var[1-4] (0-0-0)
Course Description: Supervised research in computer science.
Prerequisite: None.
Registration Information: Computer science majors only. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CS 510  Image Computation  Credits: 4 (3-3-0)
Course Description: Image generation theory and implementation, image manipulation/interpretation. Ray tracing, geometric and photometric manipulation, image matching.
Prerequisite: CS 410.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 514  Software Product and Process Evaluation  Credits: 4 (3-3-0)
Course Description: Software development process modeling and evaluation; software metrics, testing, verification, validation; experimental methods in software engineering.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 517  Software Specification and Design  Credits: 4 (3-3-0)
Course Description: Rigorous techniques for modeling, specifying, and analyzing software requirements and designs; reusable software development.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 518  Distributed Software System Development  Credits: 4 (3-2-0)
Course Description: Principles of developing distributed systems; middleware technologies and techniques for building complex distributed component-based systems.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 520  Analysis of Algorithms  Credits: 4 (3-3-0)
Course Description: Asymptotic complexity, algorithm complexity, and problem complexity; the Master Method; parallel algorithms; algorithm design.
Prerequisite: CS 420.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 530  Fault-Tolerant Computing  Credits: 4 (3-3-0)
Course Description: Achieving high reliability and fault tolerance. Fault modeling, testing, reliability evaluation, redundancy, fault tolerance. (NT-0)
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 533  Database Management Systems  Credits: 4 (3-2-0)
Course Description: Theory and implementation of concurrency control, recovery, and query processing as it applies to centralized and distributed systems.
Prerequisite: CS 430.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 535  Big Data  Credits: 4 (3-3-0)
Course Description: Topics in storage, retrieval, analysis, and knowledge discovery using Big Data. Lectures include real-world case studies.
Prerequisite: CS 455.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 540  Artificial Intelligence  Credits: 4 (3-3-0)
Course Description: Knowledge representation and reasoning, search, planning, evolutionary computation, data mining, information retrieval, intelligent Web, agent systems.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 545  Machine Learning  Credits: 4 (3-3-0)
Course Description: Computational methods that allow computers to learn; neural networks, decision trees, genetic algorithms, bagging and boosting.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 548  Bioinformatics Algorithms  Credits: 4 (3-2-0)
Also Offered As: STAT 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Students should already have knowledge of a contemporary programming language. Must register for lecture and laboratory. Credit not allowed for both CS 548 and STAT 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 553  Algorithmic Language Compilers  Credits: 4 (3-3-0)
Course Description: Compiler construction; lexical scanner generators, parser generators, dataflow analysis, optimization.
Prerequisite: CS 453.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CS 555 Distributed Systems  Credits: 4 (3-2-0)
Course Description: Principles, paradigms, protocols and algorithms underlying modern distributed systems.
Prerequisite: CS 455.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring, Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 556 Computer Security  Credits: 4 (3-2-0)
Course Description: Topics in computer security: concepts, threats, risks, access control models, trusted systems, cryptography, authentication.
Prerequisite: CS 356 or CS 455.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 557 Advanced Networking  Credits: 4 (3-3-0)
Course Description: Core internet protocols, including transport, routing, and security protocols. Protocol design principles. Network measurements and assessment.
Prerequisite: CS 457.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 558 Computer Science Seminar  Credits: 1 (1-0-0)
Course Description: Special topics in computer science.
Prerequisite: Must be a: Graduate, Professional.
Restriction: CS 514 or CS 517 or CS 518.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 560 Foundations of Fine-Grain Parallelism  Credits: 4 (3-2-0)
Also Offered As: ECE 560.
Course Description: Programming novel architectures; performance tuning; automatic parallelization; program transformation; polyhedral model; equational programming.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 560 and ECE 560. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 561 Hardware/Software Design of Embedded Systems  Credits: 4 (3-3-0)
Also Offered As: ECE 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high-level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 561 and ECE 561.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 562 Optical Networks  Credits: 4 (3-3-0)
Course Description: Optical network technologies; multiplexing techniques, switching; optical transceivers and electronics; transmission systems; optical components.
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 570 Advanced Computer Architecture  Credits: 4 (3-3-0)
Course Description: Pipelined CPU design. Superscalar architectures and instruction-level parallelism. Cache and memory hierarchy design.
Prerequisite: CS 470.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 575 Parallel Processing  Credits: 4 (3-3-0)
Course Description: Parallel and distributed computing models, algorithms, mapping and performance evaluations, parallel computing tools and applications.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 612 Topics in Computer Graphics  Credits: 4 (3-2-0)
Course Description: Computer graphics research topics.
Prerequisite: CS 510.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614A Advanced Topics in Software Engineering: Specification and Design  Credits: 4 (3-3-0)
Course Description: Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614B Advanced Topics in Software Engineering: Testing and Verification  Credits: 4 (3-3-0)
Course Description: Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614C Advanced Topics in Software Engineering: Software Environments and Tools  Credits: 4 (3-3-0)
Course Description: Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CS 641D Advanced Topics in Software Engineering: Software Measurement, Analysis, and Evaluation Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 641E Advanced Topics in Software Engineering: Application Domains Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 620 Advanced Topics in Algorithms Credits: 4 (3-2-0)
Course Description: Designing and analyzing algorithms and data structures; illustrations from a variety of problem domains.
Prerequisite: CS 520.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 635 Advanced Fault-Tolerant Computing Credits: 4 (3-3-0)
Course Description: Advanced topics and recent developments in high reliability and fault-tolerant systems.
Prerequisite: CS 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 640 Advanced Artificial Intelligence I Credits: 2 (2-0-0)
Course Description: Research topics in artificial intelligence: genetic algorithms, neural networks, connectionist models; machine learning; planning, automated reasoning.
Prerequisite: CS 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 641 Advanced Artificial Intelligence II Credits: 2 (2-0-0)
Course Description: Advanced research topics in artificial intelligence.
Prerequisite: CS 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 645 Advanced Machine Learning: Neural Networks Credits: 4 (3-2-0)
Course Description: Study of machine learning research literature and implementations of algorithms for neural networks and reinforcement learning.
Prerequisite: CS 545 with a minimum grade of C.
Restriction: Must be a: Graduate.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 646 Machine Learning in Bioinformatics Credits: 4 (3-2-0)
Course Description: Recent research on the applications of machine learning in bioinformatics.
Prerequisite: CS 545 or STAT 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 653 Topics in Programming Language Implementation Credits: 4 (3-3-0)
Course Description: Data dependence analysis; code generation.
Prerequisite: CS 553.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 655 Advanced Topics in Distributed Systems Credits: 4 (3-2-0)
Course Description: Issues related to robustness, replication, consistency, scalability, isolation and privacy in large-scale distributed systems.
Prerequisite: CS 555.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656A Advanced Topics in Computer Security: Formal Models of Computer Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656B Advanced Topics in Computer Security: Models for Privacy and Application Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CS 656C  Advanced Topics in Computer Security: Network Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 657  Advanced Topics in Computer Networking Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer networks.
Prerequisite: CS 557.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 658  Internet Engineering Credits: 4 (3-3-0)
Also Offered As: ECE 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks routing, switching flow control, multicast, performance, and applications.
Prerequisite: CS 457 or ECE 456.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 658 and ECE 658.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Also Offered As: ECE 670B.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670B and ECE 670B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 670C  Topics in Architecture/Systems: Distributed Systems Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670C.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670C and ECE 670C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Also Offered As: ECE 670D.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670D and ECE 670D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 674  Heterogeneous Computing Credits: 3 (3-0-0)
Also Offered As: ECE 674.
Course Description: Allocation of resources to tasks in parallel and distributed heterogeneous computing systems. A variety of computational environments are considered.
Prerequisite: CS 570 or CS 575 or ECE 550A or ECE 550B or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 674 and ECE 674.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 675  Advanced Parallel Computing Credits: 4 (3-3-0)
Course Description: Parallel computing, computational models, parallel languages and algorithms, distributed simulation, Internet and mobile computing, parallel search.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 692  Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 695  Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 696  Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Computer Science

Computer Science is the study of algorithms and software systems: their theory, analysis, design, efficiency, implementation, maintenance, and application. Computer scientists seek to advance the fundamental understanding of how information is processed, as well as the practical design of software to perform specific functions. Computer science courses include, but are not limited to, the study of algorithm design, networks, security, programming languages, software engineering, graphics, databases, and artificial intelligence.

Computer Science majors are required to complete basic courses in calculus, core courses in programming and mathematical foundations, computer organization, data structures, software engineering, algorithmic theory, computer security, and systems software. An understanding of statistics is also required. Majors select senior-level courses from offerings such as graphics, artificial intelligence, networks, compilers, bioinformatics, architecture, parallel programming, cloud computing, big data, and database systems. A minor in Computer Science is also available.

Department of Computer Science laboratories are open to students 24/7. All major systems are networked and accessible by direct network connection from student residences.

Learning Outcomes

Students will:

- Demonstrate proficiency in the areas of software design and development, computing systems, and algorithmic analysis. Students will, upon completing this program, have a thorough grounding in the key principles and practices of computing, and in the mathematical and scientific principles of computation
- Be able to work effectively in groups to develop computational solutions to complex problems
- Be able to communicate ideas effectively, both generally and specifically, with regard to technology and computing
- Upon completing this program, either attend graduate school in computer science or find professional computer-related employment

Potential Occupations

The vast majority of Computer Science students are able to find related employment at graduation. The proven performance of CSU graduates has resulted in annual recruiting visits by a wide variety of commercial firms, government agencies, and research laboratories. Graduates have found employment as software developers and with research and development teams in government and industry. Internships are readily available that enhance skills and marketability.

Some career opportunities include, but are not limited to: systems programmer, software designer, computer researcher, software engineer, software tester, systems administrator, security systems designer, database programmer, consultant, technical product support personnel, and educator.

Requirements

Effective Fall 2016

A minimum grade of C is required in CO 150 and in all mathematics, statistics, computer science, and departmental Group II courses which are required for graduation.
### Freshman

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td></td>
<td>1A</td>
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<tr>
<td>CS 163 or 164</td>
<td>Java (CS1) No Prior Programming</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
<td></td>
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<tr>
<td>CS 192</td>
<td>First-Year Seminar-Computer Science</td>
<td></td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<td>1B</td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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Select at least two courses from two departments totaling a minimum of 7 credits from the following (one course must be or include the sequenced laboratory):

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BZ 110</td>
<td>Principles of Animal Biology (GT-SC2)</td>
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<td>&amp; BZ 111</td>
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<td></td>
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<tr>
<td>BZ 120</td>
<td>Principles of Plant Biology (GT-SC1)</td>
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<td>3A</td>
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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<tr>
<td>&amp; CHEM 108</td>
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<td></td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
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<tr>
<td>&amp; CHEM 112</td>
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<tr>
<td>GEOL 120</td>
<td>Exploring Earth: Physical Geology (GT-SC2)</td>
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<tr>
<td>&amp; GEOL 121</td>
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<td></td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>3A</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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**Electives**  

| Total Credits | 31 |

### Sophomore

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<tbody>
<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
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<td>4</td>
</tr>
<tr>
<td>CS 253</td>
<td>Software Development with C++</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CS 270</td>
<td>Computer Organization</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 229 or 369</td>
<td>Matrices and Linear Equations</td>
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<td>2-3</td>
</tr>
<tr>
<td>&amp; Linear Algebra I</td>
<td></td>
<td></td>
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<tr>
<td>STAT 301 or 315</td>
<td>Introduction to Statistical Methods</td>
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<td>3</td>
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<tr>
<td>&amp; Statistics for Engineers and Scientists</td>
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**Arts and Humanities**  

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<tr>
<th>Total Credits</th>
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**Historical Perspectives**  

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<tr>
<th>Total Credits</th>
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**Social and Behavioral Sciences**  

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<tr>
<th>Total Credits</th>
<th>3C</th>
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**Electives**  

| Total Credits | 2-3 |

### Junior

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<th>Course Code</th>
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<tbody>
<tr>
<td>CS 314</td>
<td>Software Engineering</td>
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<tr>
<td>CS 320</td>
<td>Algorithms–Theory and Practice</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CS 356</td>
<td>Systems Security</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CS 370</td>
<td>Operating Systems</td>
<td></td>
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</table>

Select a minimum of 5 credits additional science from the list of 3A courses in the freshman year and/or from the following for a total of at least 12 credits:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AA 301</td>
<td>Astrophysics I</td>
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<tr>
<td>ATS 350</td>
<td>Introduction to Weather and Climate</td>
<td></td>
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<tr>
<td>ATS 351</td>
<td>Introduction to Weather and Climate Laboratory</td>
<td></td>
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</tr>
<tr>
<td>BZ 220</td>
<td>Introduction to Evolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 114</td>
<td></td>
<td></td>
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<tr>
<td>CIVE 260</td>
<td>Engineering Mechanics-Statics</td>
<td></td>
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<tr>
<td>GEOL 154</td>
<td>Historical and Analytical Geology</td>
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<tr>
<td>Course Code</td>
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<tr>
<td>LIFE 201A</td>
<td>Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)</td>
<td>3A</td>
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<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>3A</td>
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</tr>
<tr>
<td>PSY 352</td>
<td>Learning and Memory</td>
<td></td>
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</tr>
<tr>
<td>SOCR 330</td>
<td>Principles of Genetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCR 331</td>
<td>Genetics Laboratory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
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<td>Electives</td>
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<tr>
<td><strong>Total Credits</strong></td>
<td></td>
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**Senior**

**Group 1-A:**

Select one course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 410</td>
<td>Introduction to Computer Graphics</td>
<td>4A,4C</td>
</tr>
<tr>
<td>CS 414</td>
<td>Object-Oriented Design</td>
<td>4A,4C</td>
</tr>
<tr>
<td>CS 435</td>
<td>Introduction to Big Data</td>
<td>4A,4C</td>
</tr>
<tr>
<td>CS 440</td>
<td>Introduction to Artificial Intelligence</td>
<td>4A,4C</td>
</tr>
<tr>
<td>CS 454</td>
<td>Principles of Programming Languages</td>
<td>4A,4C</td>
</tr>
<tr>
<td>CS 455</td>
<td>Introduction to Distributed Systems</td>
<td>4A,4C</td>
</tr>
<tr>
<td>CS 464</td>
<td>Principles of Human-Computer Interaction</td>
<td>4A,4C</td>
</tr>
<tr>
<td>CS 475</td>
<td>Parallel Programming</td>
<td>4A,4C</td>
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</table>

**Group II:**

Select at least 9 hours from the following Technical Electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 350</td>
<td>Operating Systems and Networks</td>
<td>4B</td>
</tr>
<tr>
<td>CIS 355</td>
<td>Business Database Systems</td>
<td>4B</td>
</tr>
<tr>
<td>CIS 360</td>
<td>Systems Analysis and Design</td>
<td>4B</td>
</tr>
<tr>
<td>CIS 410</td>
<td>Web Application Development</td>
<td>4B</td>
</tr>
<tr>
<td>CIS 413</td>
<td>Advanced Networking and Security</td>
<td>4B</td>
</tr>
<tr>
<td>E 320</td>
<td>Introduction to the Study of Language</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 311</td>
<td>Linear System Analysis I</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 312</td>
<td>Linear System Analysis II</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 331</td>
<td>Electronics Principles I</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 332</td>
<td>Electronics Principles II</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 411</td>
<td>Control Systems</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 421</td>
<td>Telecommunications I</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 422</td>
<td>Telecommunications II</td>
<td>4B</td>
</tr>
<tr>
<td>ECE 451</td>
<td>Digital System Design</td>
<td>4B</td>
</tr>
<tr>
<td>JTC 372</td>
<td>Web Design and Management</td>
<td>4B</td>
</tr>
<tr>
<td>JTC 413</td>
<td>New Communication Technologies and Society</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 301</td>
<td>Introduction to Combinatorial Theory</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 317</td>
<td>Advanced Calculus of One Variable</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 331</td>
<td>Introduction to Mathematical Modeling</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 332</td>
<td>Partial Differential Equations</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 345</td>
<td>Differential Equations</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 360</td>
<td>Mathematics of Information Security</td>
<td>4B</td>
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<tr>
<td>MATH 366</td>
<td>Introduction to Abstract Algebra</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 405</td>
<td>Introduction to Number Theory</td>
<td>4B</td>
</tr>
<tr>
<td>Course Code</td>
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<tr>
<td>------------</td>
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<tr>
<td>MATH 417</td>
<td>Advanced Calculus I</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 418</td>
<td>Advanced Calculus II</td>
<td>4B</td>
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<tr>
<td>MATH 419</td>
<td>Introduction to Complex Variables</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 435</td>
<td>Projects in Applied Mathematics</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 450</td>
<td>Introduction to Numerical Analysis I</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 451</td>
<td>Introduction to Numerical Analysis II</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 460</td>
<td>Information and Coding Theory</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 469</td>
<td>Linear Algebra II</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 470</td>
<td>Euclidean and Non-Euclidean Geometry</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 472</td>
<td>Introduction to Topology</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 474</td>
<td>Introduction to Differential Geometry</td>
<td>4B</td>
</tr>
<tr>
<td>MECH 307</td>
<td>Mechatronics and Measurement Systems</td>
<td>4B</td>
</tr>
<tr>
<td>NR 322</td>
<td>Introduction to Geographic Information Systems</td>
<td>4B</td>
</tr>
<tr>
<td>NR 323</td>
<td>Remote Sensing and Image Interpretation</td>
<td>4B</td>
</tr>
<tr>
<td>NR 422</td>
<td>GIS Applications in Natural Resource Management</td>
<td>4B</td>
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<tr>
<td>NR 423</td>
<td>Applications of Global Positioning Systems</td>
<td>4B</td>
</tr>
<tr>
<td>PH 314</td>
<td>Introduction to Modern Physics</td>
<td>4B</td>
</tr>
<tr>
<td>PH 315</td>
<td>Modern Physics Laboratory</td>
<td>4B</td>
</tr>
<tr>
<td>PH 341</td>
<td>Mechanics</td>
<td>4B</td>
</tr>
<tr>
<td>PH 351</td>
<td>Electricity and Magnetism</td>
<td>4B</td>
</tr>
<tr>
<td>PH 353</td>
<td>Optics and Waves</td>
<td>4B</td>
</tr>
<tr>
<td>PH 361</td>
<td>Physical Thermodynamics</td>
<td>4B</td>
</tr>
<tr>
<td>PH 451</td>
<td>Introductory Quantum Mechanics I</td>
<td>4B</td>
</tr>
<tr>
<td>PHIL 305F</td>
<td>Philosophical Issues in the Professions: Information Science</td>
<td>4B</td>
</tr>
<tr>
<td>PHIL 410</td>
<td>Formal Logic</td>
<td>4B</td>
</tr>
<tr>
<td>PHIL 415</td>
<td>Logic and Scientific Method</td>
<td>4B</td>
</tr>
<tr>
<td>PSY 354</td>
<td>Human-Computer Interaction</td>
<td>4B</td>
</tr>
<tr>
<td>PSY 452</td>
<td>Cognitive Psychology</td>
<td>4B</td>
</tr>
<tr>
<td>PSY 456</td>
<td>Sensation and Perception</td>
<td>4B</td>
</tr>
<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
<td>4B</td>
</tr>
<tr>
<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
<td>4B</td>
</tr>
<tr>
<td>STAT 350</td>
<td>Design of Experiments</td>
<td>4B</td>
</tr>
<tr>
<td>STAT 372</td>
<td>Data Analysis Tools</td>
<td>4B</td>
</tr>
<tr>
<td>STAT 420</td>
<td>Probability and Mathematical Statistics I</td>
<td>4B</td>
</tr>
<tr>
<td>STAT 430</td>
<td>Probability and Mathematical Statistics II</td>
<td>4B</td>
</tr>
<tr>
<td>STAT 460</td>
<td>Applied Multivariate Analysis</td>
<td>4B</td>
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**Group 1-B:**
Select three courses (not previously taken) from Group 1-A above and/or from the following for a minimum of 12 credits:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CS 420</td>
<td>Introduction to Analysis of Algorithms</td>
<td>4C</td>
</tr>
<tr>
<td>CS 425</td>
<td>Introduction to Bioinformatics Algorithms</td>
<td>4C</td>
</tr>
<tr>
<td>CS 430</td>
<td>Database Systems</td>
<td>4C</td>
</tr>
<tr>
<td>CS 453</td>
<td>Introduction to Compiler Construction</td>
<td>4C</td>
</tr>
<tr>
<td>CS 457</td>
<td>Computer Networks and the Internet</td>
<td>4C</td>
</tr>
<tr>
<td>CS 470</td>
<td>Computer Architecture</td>
<td>4C</td>
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**Electives**

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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</table>

**Total Credits**

<table>
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<tr>
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<tbody>
<tr>
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**Program Total Credits:**

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>120</td>
</tr>
</tbody>
</table>

1. Select three courses from the CS Department Group II list for a total of 6-9 credits (6 credits if MATH 369 is taken to meet the linear algebra requirement in the Sophomore year).
Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Computer Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. All students must maintain a C or better in CO 150 and in all CS, MATH, STAT and departmental Group II courses which are required for graduation.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>First-Year Seminar-Computer Science (CS 192)</td>
<td>2</td>
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<tr>
<td>Calculus for Physical Scientists I (MATH 160)</td>
<td>X</td>
<td>1B</td>
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<tr>
<td>Select one course from the following:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Java (CS1) No Prior Programming (CS 163)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Java (CS1) Prior Programming (CS 164)</td>
<td>X</td>
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</tr>
<tr>
<td>Department Approved Science</td>
<td>3A</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>Electives</td>
<td>3</td>
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<tr>
<td>Total Credits</td>
<td>16</td>
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<table>
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<tr>
<th>Semester 2</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>College Composition (CO 150)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>Calculus for Physical Scientists II (MATH 161)</td>
<td>X</td>
<td>1B</td>
<td>4</td>
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<tr>
<td>Department Approved Science with Lab</td>
<td>3A</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Java (CS2) Data Structures and Algorithms (CS 165)</td>
<td>X</td>
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<tr>
<td>Total Credits</td>
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<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Discrete Structures and their Applications (CS 220)</td>
<td>X</td>
<td>4</td>
<td></td>
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</tr>
<tr>
<td>Computer Organization (CS 270)</td>
<td>X</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
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<table>
<thead>
<tr>
<th>Semester 4</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Software Development with C++ (CS 253)</td>
<td>X</td>
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<tr>
<td>Select one course from the following:</td>
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<tr>
<td>Matrices and Linear Equations (MATH 229)</td>
<td>X</td>
<td></td>
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<tr>
<td>Linear Algebra I (MATH 369)</td>
<td>X</td>
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<td>Select one course from the following:</td>
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<tr>
<td>Introduction to Statistical Methods (STAT 301)</td>
<td>X</td>
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<tr>
<td>Statistics for Engineers and Scientists (STAT 315)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<td></td>
</tr>
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<td>Electives</td>
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<td>Total Credits</td>
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</table>

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
### Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CS 314: Software Engineering</td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>CS 320: Algorithms–Theory and Practice</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CS 370: Operating Systems</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td>2</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
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<tr>
<td>CS 253 must be completed by the end of Semester 5.</td>
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**Total Credits: 15**

<table>
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<tr>
<th>Semester 6</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CS 356: Systems Security</td>
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<td></td>
<td>3</td>
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<tr>
<td>Department Approved Science</td>
<td></td>
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<td>5</td>
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<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
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<td>3</td>
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<tr>
<td>Electives</td>
<td></td>
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<td></td>
<td>3-6</td>
</tr>
<tr>
<td>CS 314 and CS 320 and CS 370 must be completed by the end of Semester 6.</td>
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</table>

**Total Credits: 14-17**

<table>
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<tr>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AUCC 4A/C 400-Level CS course (See Group I-A List on Program Requirements tab)</td>
<td></td>
<td></td>
<td>4A,4C</td>
<td>4</td>
</tr>
<tr>
<td>AUCC 4B Technical Electives (See Group II List on Program Requirements tab)</td>
<td></td>
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<td>4B</td>
<td>3</td>
</tr>
<tr>
<td>AUCC 4C 400-Level CS course (See Group I-A/B List on Program Requirements tab)</td>
<td></td>
<td></td>
<td>4C</td>
<td>4</td>
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<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>CS 356 and at least one 400-level CS class must be completed by the end of Semester 7.</td>
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<td></td>
<td></td>
<td>14-17</td>
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**Total Credits: 14-17**

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUCC 4B Technical Electives (Group II List)</td>
<td>X</td>
<td></td>
<td>4B</td>
<td>3-6</td>
</tr>
<tr>
<td>AUCC 4C 400-Level CS course (Group I-A/B List)</td>
<td>X</td>
<td></td>
<td>4C</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td>X</td>
<td></td>
<td></td>
<td>14-17</td>
</tr>
</tbody>
</table>

**Total Credits: 14-17**

### Program Total Credits: 120

### Major in Applied Computing Technology

The Applied Computing Technology major is a program oriented towards the use of computing technology and software development in specific domains depending on the student’s concentration, rather than towards developing large-scale systems and enterprise-level computer software. Students will receive a strong background in computer programming and information technology aimed towards a specific application area. At this time there are three concentrations: human-centered computing, computing technology, and computing education.

### Learning Outcomes

Students completing this program will be able to:

- Write computer software.
- Develop computer applications to be used in a variety of areas.
- Develop websites, including web-based software and databases for use by experts in a broad range of fields.
- Grasp and demonstrate the subject matter of a specific field in which computers are to be used.
- Work effectively in groups to develop solutions to complex, field-specific problems.
- Communicate through writing about their technical activities.

### Concentrations

- Computing Education Concentration
- Computing Technology Concentration
- Human-Centered Computing Concentration
Major in Applied Computing Technology, Human-Centered Computing Concentration

This concentration is designed to meet the demand for experts in human-centered computing and interface design, and provide an academic program for students interested in the interdisciplinary study of cognitive psychology and artificial intelligence applied to human-computer interaction.

The program combines computer science courses leading to expertise in artificial intelligence and graphics with cognitive psychology courses and specialized courses in human-computer interaction. This program aims to produce an understanding of human psychological abilities and relate them to computer use and the ergonomics of computational services.

Potential Occupations

This program prepares students for work in computer interface design and within organizations evaluating human factors in computer software design. Graduates of this program may go on to become user interface (UI) designers and architects, human factors engineers/interaction designers, user trial engineers/researchers, computer user interface programmers, and computer ergonomics consultants.

Requirements

Effective Fall 2016

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>CS 192</td>
<td>First-Year Seminar-Computer Science</td>
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<tr>
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<td>Java (CS1) No Prior Programming</td>
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<tr>
<td>CS 164</td>
<td>Java (CS1) Prior Programming</td>
<td></td>
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<tr>
<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
<td></td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
<td>4</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>Biological and Physical Sciences</td>
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<td>3A</td>
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<td>Global and Cultural Awareness</td>
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Total Credits: 30

Sophomore

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<tbody>
<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
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<td>CS 253</td>
<td>Software Development with C++</td>
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<td>CS 270</td>
<td>Computer Organization</td>
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<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
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<tr>
<td>MATH 229</td>
<td>Matrices and Linear Equations</td>
<td></td>
<td>2</td>
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<tr>
<td>PSY 250</td>
<td>Research Methods in Psychology</td>
<td></td>
<td>4</td>
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<td>PSY 252</td>
<td>Mind, Brain, and Behavior</td>
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<td>3</td>
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<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
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<td>Biological and Physical Sciences</td>
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Total Credits: 31

Junior

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<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>CS 320</td>
<td>Algorithms–Theory and Practice</td>
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<td>CS 464</td>
<td>Principles of Human-Computer Interaction</td>
<td>4A,4B,4C</td>
<td>4</td>
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<td>CT 310</td>
<td>Web Development</td>
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<td>&amp; STAT 312</td>
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<td></td>
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<tr>
<td>OR</td>
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<tr>
<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
<td>4B</td>
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<td>Arts and Humanities</td>
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<td>3B</td>
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<td>Historical Perspectives</td>
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Total Credits: 31
Upper-Division Electives 3
Electives 3-6

Total Credits 29

Senior

CS 410 Introduction to Computer Graphics 4
CS 440 Introduction to Artificial Intelligence 4
PSY 452 Cognitive Psychology 3
PSY 453 or 457 Cognitive Psychology Laboratory 2
Sensation and Perception Laboratory 3
PSY 456 Sensation and Perception 3
Arts and Humanities 3B 3
Upper-Division Electives 1 6-9
Electives 2-5

Total Credits 30

Program Total Credits: 120

1 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Computer Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below.

Freshman

Semester 1

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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<tr>
<td>CO 150</td>
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<td>CS 192</td>
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<tr>
<td>CS 163</td>
<td>Java (CS1) No Prior Programming</td>
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<td>CS 164</td>
<td>Java (CS1) Prior Programming</td>
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<td>Biological and Physical Sciences</td>
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<td>Elective</td>
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<td>3A</td>
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<tr>
<td>MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1, if necessary.</td>
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Total Credits 16

Semester 2

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<tbody>
<tr>
<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>X</td>
<td>1B</td>
<td>4</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
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<td>CO 150 and CS 163 or CS 164 must be completed by the end of Semester 2.</td>
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Total Credits 14

Sophomore

Semester 3

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<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
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<td>CS 270</td>
<td>Computer Organization</td>
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<td>4</td>
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<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>X</td>
<td>1B</td>
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<td>PSY 250</td>
<td>Research Methods in Psychology</td>
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CS 165 and MATH 160 must be completed by the end of Semester 3.

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**Semester 4**

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<td>Software Development with C++</td>
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<td>Matrices and Linear Equations</td>
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<td>Advanced Writing</td>
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<td>Biological and Physical Sciences</td>
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CS 220, CS 270, and MATH 161 must be completed by the end of Semester 4.

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**Junior**

**Semester 5**

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<td>Group A</td>
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<tr>
<td>STAT 311</td>
<td>Statistics for Behavioral Sciences I</td>
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<td>STAT 312</td>
<td>Statistics for Behavioral Sciences II</td>
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<td>Group B</td>
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<td>3D</td>
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<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
<td>4B</td>
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<td>Historical Perspectives</td>
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<tr>
<td>CS 253</td>
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CS 253 must be completed by the end of Semester 5.

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**Semester 6**

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<td>CS 464</td>
<td>Principles of Human-Computer Interaction</td>
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CS 320 must be completed by the end of Semester 6.

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**Senior**

**Semester 7**

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<td>Introduction to Artificial Intelligence</td>
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<td>PSY 452</td>
<td>Cognitive Psychology</td>
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<td>PSY 456</td>
<td>Sensation and Perception</td>
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<td>Arts and Humanities</td>
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**Semester 8**

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<td>PSY 457</td>
<td>Sensation and Perception Laboratory</td>
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The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

<table>
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<tr>
<th>Total Credits</th>
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</table>

**Program Total Credits:** 120
Major in Applied Computing Technology, Computing Education Concentration

This teacher education program leads to a Bachelor of Science degree in Applied Computing Technology with a concentration in Computing Education (K-12 technology education) with state licensure in instructional technology (computers) and provides students with a background in education, computer programming, and computer systems enabling graduates to teach computing principles and serve as computing technology experts in public schools.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (CEP) (http://cep.chhs.colostate.edu) program and the College of Health and Human Sciences for general information.

Effective Fall 2016

Freshman

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
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<td>MATH 160</td>
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<td>SPCM 200</td>
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<tr>
<td>CS 163</td>
<td>Java (CS1) No Prior Programming</td>
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<tr>
<td>CS 164</td>
<td>Java (CS1) Prior Programming</td>
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<tr>
<td>Biological and Physical Science</td>
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<tr>
<td>Global and Cultural Awareness</td>
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Total Credits 31

Sophomore

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<tr>
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<tbody>
<tr>
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<td>CS 220</td>
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<td>CS 270</td>
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<td>Historical Perspectives</td>
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Total Credits 30

Junior

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<td>CT 310</td>
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<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
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<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
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<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
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<td>JTC 413</td>
<td>New Communication Technologies and Society</td>
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Total Credits 30
CS *** 300-level Computer Science Course
Advanced Writing

Total Credits 29

Senior

CT 320 Network and System Administration 4
EDCT 465 Methods and Materials in Technology Education 3
EDCT 485 Student Teaching 4A,4C 11
EDUC 450 Instruction II-Standards and Assessment 4
EDUC 486E Practicum: Instruction II 1
EDUC 493A Seminar: Professional Relations 4C 1
CS 4*** 400-level Computer Science Course 4
Electives 2-3

Total Credits 30-31

Program Total Credits: 120

1 Students who have completed CS 200 and CS 270 may need a registration override from the Computer Information Systems department to take this course.
2 The 400-level computer science course must be numbered less than 485.
3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Applied Computing Technology # Computing Education concentration assumes students enter college prepared to take calculus for Physical Scientists. This particular calculus course requires Logarithmic & Exponential Function and Trigonometry in addition to college algebra. Entering students will need to have completed College Algebra (MATH 117 & MATH 118) prior to the first semester to be on schedule to complete within four years.

Freshman

Semester 1

Critical Recommended AUCC Credits

CO 150 College Composition (GT-CO2) 1A 3
CS 110 Personal Computing 4
SPCM 200 Public Speaking 3
Biological and Physical Sciences 3A 3
Elective 3

MATH 124, MATH 125, MATH 126 must be completed by the end of Semester 1, if necessary. X

Total Credits 17

Semester 2

Critical Recommended AUCC Credits

Select one course from the following:

CS 163 Java (CS1) No Prior Programming X
CS 164 Java (CS1) Prior Programming X
MATH 160 Calculus for Physical Scientists I (GT-MA1) X 1B 4
Biological and Physical Sciences 3A 3
Global and Cultural Awareness 3E 3

CO 150 must be completed by the end of Semester 2. X

Total Credits 14

Sophomore

Semester 3

Critical Recommended AUCC Credits

CS 165 Java (CS2) Data Structures and Algorithms X 4
EDUC 275 Schooling in the United States (GT-SS3) 3C 3

Select one course from the following:
### Major in Applied Computing Technology, Computing Education Concentration

**STAT 201** General Statistics  
**STAT 204** Statistics for Business Students  
**STAT 301** Introduction to Statistical Methods

<table>
<thead>
<tr>
<th>Arts and Humanities</th>
<th>Elective</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>3</td>
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</table>

**MATH 160** must be completed by the end Semester 3.

<table>
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### Semester 4

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<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
<td>X</td>
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<td>4</td>
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<tr>
<td>CS 270</td>
<td>Computer Organization</td>
<td>X</td>
<td></td>
<td>4</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td></td>
<td>3</td>
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<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
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<tr>
<td>EDUC 275</td>
<td>must be completed by the end of Semester 4.</td>
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<tr>
<td>Admission to Teacher Licensure required by the end of Semester 4.</td>
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### Junior

**Semester 5**

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<tr>
<td>CIS 355</td>
<td>Business Database Systems</td>
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<td>CS 253</td>
<td>Software Development with C++</td>
<td>X</td>
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<td>EDUC 340</td>
<td>Literacy and the Learner</td>
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<td>CS 3** 300-level Computer Science Course</td>
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<td>Advanced Writing</td>
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**Semester 6**

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<tr>
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<td>Web Development</td>
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<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
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<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
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<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
<td>X</td>
<td></td>
<td>1</td>
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<tr>
<td>JTC 413</td>
<td>New Communication Technologies and Society</td>
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<td>4B</td>
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<tr>
<td>CS 3** must be completed by the end of Semester 6.</td>
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### Senior

**Semester 7**

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<td>CT 320</td>
<td>Network and System Administration</td>
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<td>EDCT 465</td>
<td>Methods and Materials in Technology Education</td>
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<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
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<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
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<td></td>
<td>1</td>
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<tr>
<td>CS 4** 400-Level CS Course</td>
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<td>Elective</td>
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**Semester 8**

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<td>EDCT 485</td>
<td>Student Teaching</td>
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<td>4A,4C</td>
<td>11</td>
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<tr>
<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
<td>X</td>
<td>4C</td>
<td>1</td>
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<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
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Program Total Credits: 120
Major in Applied Computing Technology, Computing Technology Concentration

This concentration emphasizes the use of programming skills and computer applications and technology (e.g., web development, computer and network system administration) in a variety of computer application areas needed in business and other organizations. This is essentially an Information Technology (IT) program, stressing the maintenance and use of computers and computer applications rather than developing large-scale software from scratch.

The Computing Technology Concentration includes all computer science classes taken by computer science majors in the first and second year, and combines those with specialized computing technology courses, business courses, and a selection of advanced courses from the Departments of Computer Science (http://www.cs.colostate.edu/cstop) and Computer Information Systems (http://biz.colostate.edu/cis/Pages/default.aspx).

Potential Occupations

The Computing Technology Concentration prepares students for careers in information technology in which knowledge of computer programming, applications, and computing systems are used in businesses or other organizational settings. Computing technology students can be employed as computer programmers, web developers, network and system administrators, computing consultants, and business analysts.

Requirements

Effective Spring 2017

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>CO 150</td>
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<tr>
<td>ECON 202</td>
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<tr>
<td>ECON 204</td>
<td>3C</td>
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<td>Select one course from the following:</td>
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<tr>
<td>CS 163</td>
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<tr>
<td>CS 164</td>
<td>3B</td>
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<td>MATH 160</td>
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<td>Arts and Humanities</td>
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<tr>
<td>Biological and Physical Sciences</td>
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Sophomore

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<tr>
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<td>CS 165</td>
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<tr>
<td>CS 220</td>
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<tr>
<td>CS 270</td>
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<tr>
<td>Select one course from the following:</td>
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</tr>
<tr>
<td>STAT 201</td>
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<td>STAT 204</td>
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<td>STAT 301</td>
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<tr>
<td>Arts and Humanities</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<tr>
<td>Historical Perspectives</td>
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Junior

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<tr>
<td>CS 253</td>
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<tr>
<td>CT 310</td>
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<tr>
<td>FIN 305</td>
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<tr>
<td>JTC 300</td>
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<td>MGT 305</td>
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<tr>
<td>MKT 305</td>
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<td>3</td>
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<tr>
<td>Software Development with C++</td>
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<td>4</td>
</tr>
<tr>
<td>Web Development</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Fundamentals of Finance</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Professional and Technical Communication (GT-CO3)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Fundamentals of Management</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Fundamentals of Marketing</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
Advanced Technology Electives (see list below)  
Electives  
---  
Total Credits 29  
Senior  
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>
| CS 314 | Software Engineering | 4A,4B | 3  
| CT 320 | Network and System Administration | | 4  
| JTC 413 | New Communication Technologies and Society | 4A,4B,4C | 3  
Advanced Technology Electives (see list below) 9  
Upper-Division Electives1 12  
---  
Total Credits 31  
---  
Program Total Credits: 120  

Advanced Technology Electives

**Code** | **Title** | **Credits**  
--- | --- | ---  
CIS 320 | Project Management for Information Systems | 3  
CIS 355 | Business Database Systems | 3  
CIS 360 | Systems Analysis and Design | 3  
CIS 410 | Web Application Development | 3  
CIS 413 | Advanced Networking and Security | 3  
CIS 455 | Advanced Database Management | 3  
CS 356 | Systems Security | 3  
CS 370 | Operating Systems | 3  
CS 414 | Object-Oriented Design | 4  
CS 430 | Database Systems | 4  
CS 455 | Introduction to Distributed Systems | 4  
CS 457 | Computer Networks and the Internet | 4  
CS 464 | Principles of Human-Computer Interaction | 4  
JTC 372 | Web Design and Management | 3  
MATH 360 | Mathematics of Information Security | 3  

1 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**To prepare for first semester:** The curriculum for the Computer Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below.

**Freshman**

**Semester 1**

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
</table>
| CO 150 | College Composition (GT-CO2) | 1A | 3  
| ECON 202 | Principles of Microeconomics (GT-SS1) | X | 3C | 3  
| Arts and Humanities | | | 3B | 3  
| Biological and Physical Sciences | | | 3A | 4  
| Elective | | | | 3  
| MATH 124 must be completed by the end of Semester 1, if needed. | X |  
| MATH 126 is recommended to be completed by the end of Semester 1, if needed. | X |  
| Total Credits | | | | 16  

**Semester 2**

<table>
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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>ECON 204</td>
<td>Principles of Macroeconomics (GT-SS1)</td>
<td>3C</td>
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</tbody>
</table>
Select one course from the following:

- **CS 163** Java (CS1) No Prior Programming  
- **CS 164** Java (CS1) Prior Programming
- **MATH 160** Calculus for Physical Scientists I (GT-MA1)
- **Biological and Physical Sciences**  
  - 3A
- **CO 150** and MATH 126 must be completed by the end of Semester 2.

**Total Credits**: 14

### Sophomore

#### Semester 3

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<tr>
<td>ACT 205</td>
<td>Fundamentals of Accounting</td>
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<tr>
<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
<td>X</td>
<td>4</td>
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</table>

Select one course from the following:

- **STAT 201** General Statistics
- **STAT 204** Statistics for Business Students
- **STAT 301** Introduction to Statistical Methods

**Arts and Humanities**: 3B  
**Elective**: 3

**Total Credits**: 16

#### Semester 4

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<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
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<tr>
<td>CS 270</td>
<td>Computer Organization</td>
<td>X</td>
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</tbody>
</table>

**Global and Cultural Awareness**: 3E  
**Historical Perspectives**: 3D  

**ACT 205** and **ECON 204** must be completed by the end of Semester 4.

**Total Credits**: 14

### Junior

#### Semester 5

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<td>Software Development with C++</td>
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<td>4</td>
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<td>FIN 305</td>
<td>Fundamentals of Finance</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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**Total Credits**: 13

#### Semester 6

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<tr>
<td>CT 310</td>
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<td>MGT 305</td>
<td>Fundamentals of Management</td>
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<td>MKT 305</td>
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<tr>
<td>Advanced Technology Elective (See Department List on Concentration Requirements tab)</td>
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**Total Credits**: 16

### Senior

#### Semester 7

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<td>JTC 413</td>
<td>New Communication Technologies and Society</td>
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<td>4A,4B,4C</td>
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<tr>
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**Total Credits**: 14

#### Semester 8

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<tr>
<td>CS 314</td>
<td>Software Engineering</td>
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<tr>
<td>Advanced Technology Electives (See Department List on Concentration Requirements tab)</td>
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<td>4A,4B</td>
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**Total Credits**: 6
Upper-Division Electives

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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Total Credits: 17

Program Total Credits: 120

Minor in Computer Science

The minor in Computer Science provides students with the foundations of computation and software development.

Requirements

Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required in all courses required for the minor.

<table>
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<tr>
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<tr>
<td>CS 163</td>
<td>Java (CS1) No Prior Programming</td>
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<tr>
<td>CS 164</td>
<td>Java (CS1) Prior Programming</td>
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</tr>
<tr>
<td>CS 165</td>
<td>Java (CS2) Data Structures and Algorithms</td>
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<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
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<tr>
<td>CS 270</td>
<td>Computer Organization</td>
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</tr>
<tr>
<td>CS***</td>
<td>Courses numbered 300- or above</td>
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</tbody>
</table>

Department of Mathematics

Office in Weber Building, Room 101
(970) 491-1303
math.colostate.edu (http://www.math.colostate.edu)

Professor Kenneth McLaughlin, Chair

Undergraduate

Majors

- Major in Mathematics
  - Actuarial Science Concentration
  - Applied Mathematics Concentration
  - Computational Mathematics Concentration

Minors

- General Mathematics Concentration
- Mathematics Education Concentration
- Mathematics of Information Concentration

Graduate

Graduate Programs in Mathematics

The department offers the Master of Science and Doctor of Philosophy degrees with programs in Pure and Applied Mathematics. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Math (http://www.math.colostate.edu).

Master Programs

- Master of Science in Mathematics, Plan A*
- Master of Science in Mathematics, Plan B*

Ph.D.

- Ph.D. in Mathematics*

* Please see department for program of study.

Courses

Mathematics (MATH)

MATH 101 Math in the Social Sciences (GT-MA1) Credits: 3 (2-2-0)
Course Description: Voting theory, power indices, fair division, apportionment, circuits and trees, list processing, descriptive statistics, probability.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 105 Patterns of Phenomena (GT-MA1) Credits: 3 (2-0-1)
Course Description: Applications of mathematical ideas and mode of thought in the arts and humanities, focusing on classification, recognition.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).
MATH 117 College Algebra in Context I (GT-MA1) Credit: 1 (1-0-0)
Course Description: Functions as mathematical models. Linear, quadratic, and polynomial functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 118 College Algebra in Context II (GT-MA1) Credit: 1 (1-0-0)
Course Description: Reciprocals of linear functions, rational functions, and power functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: MATH 117, may be taken concurrently.
Registration Information: MATH 117 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 122 Theory for Introductory Programming Credit: 1 (0-0-1)
Also Offered As: CS 122.
Course Description: Set theory, definitions operations, Venn diagrams, power sets, propositional logic and proofs. Functions; loop invariants.
Prerequisite: MATH 118.
Registration Information: Must have concurrent registration in CS 161. Credit not allowed for both MATH 122 and CS 122. Credit not allowed for students who have completed CS 160. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 124 Logarithmic and Exponential Functions (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of exponential and logarithmic functions, properties of logarithmic functions, exponential and logarithmic equations, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: Required: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 125 Numerical Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of trigonometric functions, laws of sines and cosines, solutions of right and oblique triangles, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 126 Analytic Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Inverse trigonometric functions, trigonometric identities, solving trigonometric equations.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: MATH 125 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 124 Logarithmic and Exponential Functions (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of exponential and logarithmic functions, properties of logarithmic functions, exponential and logarithmic equations, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 125 Numerical Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of trigonometric functions, laws of sines and cosines, solutions of right and oblique triangles, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 126 Analytic Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Inverse trigonometric functions, trigonometric identities, solving trigonometric equations.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: MATH 125 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 141 Calculus in Management Sciences (GT-MA1) Credits: 3 (3-0-0)
Course Description: Analytic geometry, limits, equilibrium of supply and demand, differentiation, integration, applications of the derivative, integral.
Prerequisite: MATH 118.
Registration Information: Credit allowed for only one of the following courses: MATH 141, MATH 155 or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 151 Mathematical Algorithms in Matlab I Credit: 1 (0-2-0)
Course Description: Iteration and recursion, control and logical statements, expressions, functions, data types, binary numbers, symbolic manipulation of terms.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 152 Mathematical Algorithms in Maple Credit: 1 (0-2-0)
Course Description: Iteration and recursion, control and logical statements, expressions, functions, data types, binary numbers, symbolic manipulation of terms.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 155 Calculus for Biological Scientists I (GT-MA1) Credits: 4 (4-0-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications in the biosciences.
Prerequisite: (MATH 124) and (MATH 125).
Registration Information: Credit allowed for only one of the following courses: MATH 141, MATH 155, or MATH 160. Programmable graphing calculator required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 157 One Year Calculus IA (GT-MA1) Credits: 3 (3-0-0)
Course Description: Algebra and trigonometry, study skills for calculus. Limits, continuity, differentiation of elementary functions with applications.
Prerequisite: (MATH 124, may be taken concurrently) and (MATH 126).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).
MATH 158 Mathematical Algorithms in C  Credit: 1 (0-2-0)
Also Offered As: CS 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 151 and CS 156 and MATH 160.
Registration Information: Credit not allowed for both MATH 158 and CS 158.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 159 One Year Calculus IB (GT-MA1)  Credits: 3 (3-0-0)
Course Description: Study skills for calculus. Differentiation and integration of elementary functions with applications. Conic sections.
Prerequisite: MATH 157.
Registration Information: Credit allowed for only one of the following: MATH 141; MATH 155; MATH 159; MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics (GT-MA1).

MATH 160 Calculus for Physical Scientists I (GT-MA1)  Credits: 4 (3-2-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications; conic sections.
Prerequisite: (MATH 124 with a minimum grade of B) and (MATH 126 with a minimum grade of B).
Registration Information: Written consent of department chair. Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159 or MATH 160. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 161 Calculus for Physical Scientists II (GT-MA1)  Credits: 4 (3-2-0)
Course Description: Transcendental functions, integration techniques, polar coordinates, sequences and series, with mathematical software.
Prerequisite: (MATH 124) and (MATH 159 or MATH 160).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 192 First Year Seminar in Mathematical Sciences  Credit: 1 (0-0-1)
Course Description: Introduction to the richness and variety of problems addressed by mathematical language and techniques; resources and available careers.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 229 Matrices and Linear Equations  Credits: 2 (2-0-0)
Course Description: Linear systems, matrix arithmetic, homogeneous coordinates, complex numbers, eigenvalues, eigenvectors, applications to discrete dynamical systems.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 230 Discrete Mathematics for Educators  Credits: 3 (2-2-0)
Course Description: Voting theory, fair division, graph theory, linear programming, probability, teaching in small groups, proof techniques, mathematical technology.
Prerequisite: MATH 161 and EDUC 275, may be taken concurrently.
Registration Information: Credit not allowed for both MATH 230 and MATH 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 235 Introduction to Mathematical Reasoning  Credits: 2 (2-0-0)
Course Description: Mathematical statements and proof techniques, induction, set theory, inequalities, number systems, functions.
Prerequisite: MATH 161 or MATH 271.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 255 Calculus for Biological Scientists II (GT-MA1)  Credits: 4 (4-0-0)
Course Description: Derivatives and integrals of functions of several variables, differential and difference equations, matrices, applications in the biosciences.
Prerequisite: (MATH 126, may be taken concurrently) and (MATH 155).
Registration Information: Credit not allowed for both MATH 255 and MATH 261. Programmable graphing calculator required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 261 Calculus for Physical Scientists III  Credits: 4 (4-0-0)
Course Description: Vector functions, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, Green’s theorem.
Prerequisite: MATH 161.
Registration Information: Credit not allowed for both MATH 261 and MATH 255.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 271 Applied Mathematics for Chemists I  Credits: 4 (4-0-0)
Course Description: Series and limits, Taylor series, complex variables, first- and second- order ordinary differential equations, matrices, linear transformations, determinants, and eigenvalues.
Prerequisite: MATH 155 or MATH 159 or MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 272  Applied Mathematics for Chemists II  Credits: 4 (4-0-0)
Course Description: Vector fields, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, the Wave and the Schrödinger equations, separation of variables method. Inner Product Spaces. Fourier Series.
Prerequisite: MATH 271.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 301  Introduction to Combinatorial Theory  Credits: 3 (3-0-0)
Course Description: Matrices, orthogonal Latin squares, designs, difference sets, sets, binomial coefficients, inclusion and exclusion, recurrence, Ramsey's theorem, SDRs.
Prerequisite: MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 317  Advanced Calculus of One Variable  Credits: 4 (4-0-0)
Course Description: Convergence of sequences, series: limits, continuity, differentiation, integration of one-variable functions; development of skills for proving theorems.
Prerequisite: MATH 161.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 331  Introduction to Mathematical Modeling  Credits: 3 (3-0-0)
Prerequisite: (MATH 161, may be taken concurrently) and (MATH 229, may be taken concurrently or MATH 369, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 332  Partial Differential Equations  Credits: 3 (3-0-0)
Course Description: Partial differential equations, separation of variables, Fourier series and transforms, Laplace, heat and wave equations.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 332 and MATH 530.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 340  Introduction to Ordinary Differential Equations  Credits: 4 (3-2-0)
Course Description: First and second order equations, series, Laplace transforms, linear algebra, eigenvalues, first order systems of equations, numerical techniques.
Prerequisite: MATH 255 or MATH 261.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 340 and MATH 345.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 345  Differential Equations  Credits: 4 (3-2-0)
Course Description: First and second order equations, LaPlace transforms, first order systems of equations, numerical methods, applied linear algebra, linearization.
Prerequisite: (MATH 229 or MATH 369) and (MATH 255 or MATH 261).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 345 and MATH 340.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 348  Theory of Population and Evolutionary Ecology  Credits: 4 (3-3-0)
Also Offered As: BZ 348.
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: MATH 348, BZ 348, BZ 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 360  Mathematics of Information Security  Credits: 3 (3-0-0)
Course Description: Codes, ciphers, Chinese remainder theorem, primality testing, public key ciphers, RSA, finite fields, discrete algorithms, AES encryption.
Prerequisite: (MATH 229 or MATH 369) and (MATH 161).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 366  Introduction to Abstract Algebra  Credits: 3 (3-0-0)
Course Description: Sets, integers, polynomials, real and complex numbers, groups, integral domains, and fields; development of skills for proving theorems.
Prerequisite: MATH 161 or MATH 271.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 369  Linear Algebra I  Credits: 3 (3-0-0)
Course Description: Linear systems, matrices, subspaces of Euclidean spaces, linear transformations on Euclidean spaces, eigenvalues, eigenvectors.
Prerequisite: MATH 161 or MATH 255 or MATH 271.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 384  Supervised College Teaching  Credit: 1 (1-0-0)
Course Description: Skills for effective tutoring of precalculus mathematics; design and implementation of the Individualized Mathematics Program.
Prerequisite: None.
Registration Information: Written consent of instructor. May not be used to satisfy Mathematics degree requirements. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MATH 405  Introduction to Number Theory  Credits: 3 (3-0-0)
Course Description: Diophantine equations; distribution of primes; multiplicative functions; finite fields; quadratic reciprocity; quadratic number fields.
Prerequisite: MATH 360 or MATH 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 417  Advanced Calculus I  Credits: 3 (3-0-0)
Course Description: Topology of Euclidean spaces, limits, derivatives and integrals on Euclidean spaces. Implicit functions and the implicit function theorem.
Prerequisite: MATH 369 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 418  Advanced Calculus II  Credits: 3 (3-0-0)
Course Description: Line and surface integrals, series, sequences and series of functions.
Prerequisite: MATH 417.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 419  Introduction to Complex Variables  Credits: 3 (3-0-0)
Course Description: Analyticity, Cauchy integral theorem and formula, Taylor and Laurent series, residue calculus, conformal mapping and harmonic functions.
Prerequisite: MATH 261.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 425  History of Mathematics  Credits: 3 (3-0-0)
Course Description: Historical development of geometry, arithmetic, algebra, and calculus from ancient times to 20th century.
Prerequisite: (EDUC 331) and (MATH 317 and MATH 366 or MATH 317 and MATH 369 or MATH 366 and MATH 369).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 430  Fourier and Wavelet Analysis with Apps  Credits: 3 (3-0-0)
Also Offered As: ECE 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 430 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 435  Projects in Applied Mathematics  Credits: 3 (1-4-0)
Course Description: Open-ended projects with emphasis on problem identification and formulation, team approach, and reporting results.
Prerequisite: (CS 156 or CS 160 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 229 or MATH 369) and (MATH 340 or MATH 345).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 445  Linear Algebra II  Credits: 3 (3-0-0)
Course Description: Advanced topics in abstract algebra: Euclidean domains, abstract vector spaces, extension fields, Galois theory.
Prerequisite: MATH 369.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 450  Introduction to Numerical Analysis I  Credits: 3 (3-0-0)
Course Description: Solutions of systems of linear and nonlinear equations, interpolation, approximation.
Prerequisite: (CS 156 or CS 160 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 255 or MATH 261).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 451  Introduction to Numerical Analysis II  Credits: 3 (3-0-0)
Course Description: Numerical computation of eigenvalues, numerical solution of ordinary and partial differential equations.
Prerequisite: (CS 156 or CS 160 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 455  Mathematics in Biology and Medicine  Credits: 3 (3-0-0)
Course Description: Models in population biology, cell division, host-parasoid systems, bacterial growth and predator-prey systems.
Prerequisite: BZ 348 or MATH 255 or MATH 340 or MATH 345 or MATH 348.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 460  Information and Coding Theory  Credits: 3 (3-0-0)
Course Description: Entropy, mutual information, channel capacity, channel coding theorem, syndrome decoding, BCH codes, recent developments.
Prerequisite: MATH 360 and MATH 369 or MATH 366.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 466  Abstract Algebra I  Credits: 3 (3-0-0)
Course Description: Comprehensive introduction to groups, rings, and fields.
Prerequisite: MATH 235 or MATH 360 or MATH 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 467  Abstract Algebra II  Credits: 3 (3-0-0)
Course Description: Advanced topics in abstract algebra: Euclidean domains, abstract vector spaces, extension fields, Galois theory.
Prerequisite: MATH 466 and MATH 369, may be taken concurrently.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 469  Linear Algebra II  Credits: 3 (3-0-0)
Course Description: Abstract vector spaces, general theory of linear transformations, theory of determinants, canonical forms.
Prerequisite: MATH 369.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 470  Euclidean and Non-Euclidean Geometry  Credits: 3 (3-0-0)
Course Description: Topics from real Euclidean, affine metric and non-Euclidean geometries emphasizing methods and connections with other areas of mathematics.
Prerequisite: (MATH 229 or MATH 369) and (MATH 261).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 472 Introduction to Topology Credits: 3 (3-0-0)
Course Description: Topologies on sets, continuous functions, homeomorphisms. Sequences and convergence, metric spaces, connectedness, path-connectedness. Separation properties. Compactness, Countability axioms.
Prerequisite: MATH 317.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 474 Introduction to Differential Geometry Credits: 3 (3-0-0)
Course Description: Local and global geometry of curves and surfaces in Euclidean space, curvature, covariant differentiation, geodesics and the Gauss-Bonnet theorem.
Prerequisite: MATH 261 and MATH 369.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 476 Topics in Mathematics Credits: 3 (3-0-0)
Course Description: Study experiences which deal with established content areas in mathematics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 487 Internship Credits: Var[1-16] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 487 Internship Credits: Var[1-16] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 498 Undergraduate Research in Mathematics Credits: Var[1-3] (0-0-0)
Course Description: Research skills and techniques taught to suit student's level and interests. Includes both oral and written communication of results.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 501 Combinatorics I Credits: 3 (3-0-0)
Course Description: Graph algorithms, external set theory; partitions, Hadamard matrices, q-binomials, finite geometries, strongly regular graphs, triple systems, designs.
Prerequisite: MATH 501.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 502 Combinatorics II Credits: 3 (3-0-0)
Course Description: Graph algorithms, external set theory; partitions, Hadamard matrices, q-binomials, finite geometries, strongly regular graphs, triple systems, designs.
Prerequisite: MATH 501.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 505 Teaching Problem Solving in Mathematics K-12 Credits: 3 (0-0-3)
Course Description: Problem-solving strategies, cooperative learning, and manipulatives for K-12 classroom.
Prerequisite: None.
Registration Information: Offered as telecourse only. Teacher licensure required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 510 Linear Programming and Network Flows Credits: 3 (3-0-0)
Course Description: Optimization methods; linear programming, simplex algorithm, duality, sensitivity analysis, minimal cost network flows, transportation problem.
Prerequisite: MATH 261 or MATH 315.
Registration Information: Credit not allowed for both MATH 510 and ENGR 510.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 527 Introduction to Real Analysis Credits: 3 (3-0-0)
Course Description: Euclidean and metric spaces, compactness, continuity, sequences, series, multivariable differentiation, inverse and implicit function theorems.
Prerequisite: MATH 417 and MATH 369.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 519 Complex Variables I Credits: 3 (3-0-0)
Course Description: Analytic functions, complex integration theory, singularities, elementary functions, and mapping.
Prerequisite: MATH 317.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 520 Nonlinear Programming Credits: 3 (3-0-0)
Course Description: Theoretical, computational, practical aspects of nonlinear programming (NLP); unconstrained, constrained NLP; quadratic programming; large-scale NLP.
Prerequisite: MATH 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 525 Optimal Control Credits: 3 (3-0-0)
Course Description: Theory and application of optimal control and optimal estimation theory; continuous and discrete time systems; Pontryagin maximum principle.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 530 Mathematics for Scientists and Engineers Credits: 4 (4-0-0)
Course Description: Proof-oriented linear algebra, ordinary and partial differential equations.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Primarily for students in the Mathematics Graduate Interdisciplinary Studies Program. Credit not allowed for both MATH 530 and MATH 332.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 532 Mathematical Modeling of Large Data Sets Credits: 3 (3-0-0)
Course Description: Mathematical theory and algorithms for modeling large data sets. Application to real world problems. Emphasis on geometric ideas.
Prerequisite: MATH 369 or MATH 530.
Registration Information: Preparedness to do programming in a standard language required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 535 Foundations of Applied Mathematics Credits: 3 (3-0-0)
Course Description: Calculus of variations, perturbation methods, models of continuum, dimensional analysis, stochastic models, integral equations, diffusion.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 540 Dynamical Systems Credits: 3 (3-0-0)
Course Description: Linear and nonlinear systems, orbits, phase space, flows of vector fields, stability, bifurcation theory, chaos, strange attractors and applications.
Prerequisite: MATH 369 and MATH 417.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 545 Partial Differential Equations I Credits: 3 (3-0-0)
Course Description: Second order linear PDEs, elliptic and parabolic equations, equations of math physics, separation of variables, Fourier series.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 546 Partial Differential Equations II Credits: 3 (3-0-0)
Course Description: Distribution theory, Green's functions, Sobolev spaces, elliptic and parabolic equations.
Prerequisite: MATH 545.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 550 Numerical Methods in Science and Engineering Credits: 3 (3-0-0)
Also Offered As: ENGR 550.
Course Description: Finite elements, finite differences, spectral methods, method of lines, conservation laws; stability and convergence analysis for PDEs.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Registration Information: Credit not allowed for both MATH 550 and ENGR 550.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 560 Linear Algebra Credits: 3 (3-0-0)
Course Description: Finite dimensional vector spaces, inner products, dual spaces, transformations, projections, adjoints, norms, eigenvectors.
Prerequisite: MATH 369.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 561 Numerical Analysis I Credits: 4 (4-0-0)
Course Description: Numerical linear algebra, solving nonlinear systems, least squares, and minimization.
Prerequisite: (MATH 151 or CS 156 or CS 160 or CS 253) and (MATH 560).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 566 Introduction to Abstract Algebra I Credits: 3 (3-0-0)
Course Description: Analysis of algebraic structures including groups, rings, fields, and vector spaces.
Prerequisite: MATH 366.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 567 Introduction to Abstract Algebra II Credits: 3 (3-0-0)
Course Description: Field theory, Galois theory, and advanced linear algebra.
Prerequisite: MATH 566.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
MATH 570 Topology I Credits: 3 (3-0-0)
Course Description: Point-set topology including basic set theory, continuity, product and quotient spaces, metrization, compactness, and connectedness.
Prerequisite: MATH 417 or MATH 472.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 571 Topology II Credits: 3 (3-0-0)
Course Description: Fundamental group, free groups and presentations, and manifolds.
Prerequisite: MATH 566 and MATH 570.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 584 Supervised College Teaching Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 592 Seminar in Mathematics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 605A Number Theory: Algebraic Number Theory Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605B Number Theory: Arithmetic Geometry Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605C Number Theory: Elliptic Curves Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 606 Integration and Measure Theory Credits: 4 (4-0-0)
Course Description: Riemann-Cauchy integration theory, sigma-algebras, Lebesgue theory of measure and integration, Fubini’s Theorem, Radon-Nikodym theorem, Lp spaces.
Prerequisite: MATH 517.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 618 Advanced Real Analysis Credits: 3 (3-0-0)
Course Description: Normed linear spaces, Banach and Hilbert spaces, elements of functional analysis.
Prerequisite: MATH 560 and MATH 517.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 619 Complex Variables II Credits: 3 (3-0-0)
Course Description: Infinite products, entire functions, analytic continuation, Riemann surfaces, other topics.
Prerequisite: MATH 519.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 620 Variational Methods and Optimization I Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, calculus of variations, applications.
Prerequisite: MATH 570 or MATH 517.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 621 Variational Methods and Optimization II Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, variational inequalities, Lagrange multipliers, control, applications.
Prerequisite: MATH 620.
Restriciton: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 633 Industrial and Applied Mathematics Credits: 3 (2-2-0)
Course Description: Team solution of problems arising in industrial and applied mathematics. Problem formulation, solution proposal, implementation and analysis.
Prerequisite: MATH 530 or MATH 560 or MATH 561.
Restriction: Must be a: Graduate, Professional.
Registration Information: Preparedness to do programming in a standard language required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 640 Ordinary Differential Equations I Credits: 3 (3-0-0)
Course Description: Existence and uniqueness, continuation, continuous dependence, linear systems, and stability.
Prerequisite: (MATH 340 or MATH 345 or MATH 530) and (MATH 369 and MATH 517).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 641 Ordinary Differential Equations II Credits: 3 (3-0-0)
Course Description: Topics selected from nonlinear boundary value problems, periodic phenomena, differential operators, and others.
Prerequisite: MATH 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 645 Advanced Partial Differential Equations I Credits: 3 (3-0-0)
Course Description: Abstract methods for linear partial differential equations.
Prerequisite: MATH 546.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 646 Advanced Partial Differential Equations II Credits: 3 (3-0-0)
Course Description: Problems in nonlinear partial differential equations.
Prerequisite: MATH 645.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 651 Numerical Analysis II Credits: 4 (4-0-0)
Course Description: Interpolation, approximation, quadrature, initial and boundary value problems.
Prerequisite: (CS 156 or CS 160 or CS 253 or MATH 151) and (MATH 340 or MATH 345 or MATH 369 or MATH 530).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 652 Advanced Numerical Methods for PDEs Credits: 3 (3-0-0)
Course Description: Theory of numerical methods for solution of PDEs: convergence and stability properties; error estimation; approximation theory.
Prerequisite: MATH 545 or MATH 560 or MATH 617.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 660 Advanced Algebra I Credits: 3 (3-0-0)
Course Description: Theory of rings and algebras with applications.
Prerequisite: MATH 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 661 Advanced Algebra II Credits: 3 (3-0-0)
Course Description: Advanced topics from algebra: representation theory, Wedderburn theory, bilinear forms, multilinear and homological algebra.
Prerequisite: MATH 660.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 670 Introduction to Differential Manifolds Credits: 3 (3-0-0)
Course Description: Finite-dimensional differential manifolds, submanifolds, vector fields and flows, Lie groups and algebras.
Prerequisite: MATH 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 672 Projective Geometry I Credits: 3 (3-0-0)
Course Description: Algebraic sets in projective space, the Nullstellensatz, rational maps and functions, coordinate rings, Hilbert functions, dimension, degree.
Prerequisite: MATH 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 673 Projective Geometry II Credits: 3 (3-0-0)
Course Description: Topics selected from curves and surfaces, sheaf theory, algebraic geometry, singularity theory, vector bundles.
Prerequisite: MATH 672.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 676 Topics in Mathematics Credits: 3 (3-0-0)
Course Description: Advanced study experiences which deal with established content areas in mathematics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: May be taken up to 5 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 687 Internship Credits: Var[1-9] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 693 Seminar in Mathematics Credits: 3 (0-0-3)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 717 Functional Analysis I Credits: 3 (3-0-0)
Course Description: Topological vector spaces; Banach and Hilbert spaces.
Prerequisite: MATH 618.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 718 Functional Analysis II Credits: 3 (3-0-0)
Course Description: Spectral theory, operator theory, semigroups of transformations, and distribution theory.
Prerequisite: MATH 717.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 751 Numerical Methods and Models II Credits: 3 (3-0-0)
Course Description: Convergence, stability, error estimates and computing.
Prerequisite: MATH 561.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 793 Seminar in Mathematics Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 798 Research Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Mathematics

Mathematics is the science of numbers, shapes, probabilities, and measurements. It is a universal language in which information is stated in the simplest possible form. Mathematics has a dual nature—it is an independent discipline valued for its precision and elegance, and it is an essential source of ideas and techniques for many, if not most, other scientific endeavors.

The undergraduate program is structured to provide both a broad liberal arts education in mathematics, as well as a concentration in one of seven focused areas. The liberal arts component requires students to acquire a broad background in communication skills, humanities, social sciences, and natural sciences. The major core focuses on developing students’ understanding and appreciation of the mathematical sciences, problem solving skills, and their ability to combine knowledge and skills in productive ways. Core mathematics subjects include calculus, matrices and linear equations, advanced calculus of a single variable, abstract algebra, linear algebra, computer programming, and statistics.

Six concentrations are available in the program: Actuarial Science, Applied Mathematics, Computational Mathematics, General Mathematics, Mathematics Education, and Mathematics of Information.

Learning Outcomes

Graduates will:

- Obtain a solid background in theoretical mathematics and will be able to participate in mathematical work in a variety of fields or continue on to graduate school.
Major in Mathematics, Actuarial Science Concentration

• Be able to apply a range of mathematical and statistical tools to a
diverse set of problems as presented to them in either employment or
the pursuit of further education.
• Be capable of describing their mathematical assumptions and results
to colleagues.

Potential Occupations

The Mathematics major prepares students for a wide variety of
occupations in business, industry, government, and education. Although
a national shortage of mathematics teachers no longer exists, our
mathematics education graduates have been successful in finding
positions. Actuarial science graduates who have passed the first
two professional actuary exams can expect to find positions in large
metropolitan areas with good entry-level salaries. Applied mathematics
graduates continue to find employment opportunities in government
and private industry. Many pursue advanced degrees in mathematics,
computational science, or engineering. About one-third of general
mathematics graduates continue on to graduate school in mathematics
or other disciplines, with the rest finding employment in a large variety
of capacities. Participation in internships, volunteer activities, or
cooperative education opportunities is highly recommended to enhance
practical training and development. Graduates who continue to pursue
advanced degrees can attain more responsible positions with the
possibility of rising to top professional levels.

Career opportunities include, but are not limited to: applied
mathematician, actuary, engineer, statistician, financial analyst/advisor,
computer programmer, computer systems analyst, mortgage officer,
market analyst, risk analyst, tax auditor, accountant, math educator.

Concentrations

• Actuarial Science Concentration
• Applied Mathematics Concentration
• Computational Mathematics Concentration
• General Mathematics Concentration
• Mathematics Education Concentration
• Mathematics of Information Concentration

Major in Mathematics, Actuarial
Science Concentration

The Actuarial Science Concentration trains students how to use
mathematics, statistics, business, and economics to analyze and
plan for future situations involving financial uncertainties and risks.
This concentration is designed to qualify students to take the first
two examinations administered by the Society of Actuaries (https://
www.soa.org/member) and provides the foundation for the remaining
examinations.

Requirements

Effective Fall 2015

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

A minimum grade of C is required in all mathematics, statistics, and computer science courses which are required for graduation.

Freshman

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Total Credits

29-30

Sophomore

Select one group from the following:

Group A:

CS 160 | Foundations in Programming

Group B:

CS 155 | Introduction to Unix
CS 156 | Introduction to C Programming I

In addition, to complete Group B, select at least two of the following:

CS 157 | Introduction to C Programming II
CS 158/MATH 158  Mathematical Algorithms in C
MATH 151  Mathematical Algorithms in Matlab I
MATH 152  Mathematical Algorithms in Maple
ACT 210\(^2\)  Introduction to Financial Accounting 3
FIN 310  Financial Markets and Institutions 3
MATH 261  Calculus for Physical Scientists III 4
MATH 369  Linear Algebra I 4A 3
STAT 315  Statistics for Engineers and Scientists 3
Arts and Humanities 3B 3
Biological and Physical Sciences\(^1\) 3A 3-5
Historical Perspectives 3D 3

Total Credits 29-31

Junior

FIN 300  Principles of Finance 3
ECON 335/AREC 335  Introduction to Econometrics 3
MATH 317  Advanced Calculus of One Variable 4B 4
MATH 345  Differential Equations 4
STAT 321  Elementary Probabilistic-Stochastic Modeling 3
STAT 420  Probability and Mathematical Statistics I 3
STAT 430  Probability and Mathematical Statistics II 3
Electives 6

Total Credits 29

Senior

BUS 205  Legal and Ethical Issues in Business 3
FIN 342  Risk Management and Insurance 3
FIN 370  Financial Management-Theory and Application 3
JTC 300  Professional and Technical Communication (GT-CO3) 2 3
MATH 417  Advanced Calculus I 4C 3
MATH 495\(^3\)  Independent Study 1
Biological and Physical Sciences\(^1\) 3A 0-3
Electives\(^4\) 11-17

Total Credits 30-33

Program Total Credits: 120

\(^1\) Students in this concentration must take a total of 10 credits in category 3A, and at least one course must have a laboratory component.
\(^2\) Students in this concentration may need to obtain a prerequisite override from the appropriate department to enroll in this class.
\(^3\) Preparation for Exam I.
\(^4\) Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

The Major Completion Map for this concentration will be published in the 17-18 General Catalog. Students should consult with their Advisor or visit the Department for the current Major Completion Map requirements.

Major in Mathematics, Applied Mathematics Concentration

The Applied Mathematics Concentration prepares students for careers as applied mathematicians working in business, government, and industry. It is recommended that students supplement the core mathematical program with courses in their chosen application area, for example, engineering, public health, finance, electronics, or geology. Course requirements emphasize mathematical foundations as well as the application of mathematics in other disciplines. In particular, students receive training in numerical analysis, mathematical modeling, statistics, and computing, as well as a solid preparation for further study.

Requirements
## Effective Spring 2017

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

A minimum grade of C is required in all mathematics, statistics, and computer science courses which are required for graduation.

### Freshman

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<tr>
<th>Course</th>
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<th>Credits</th>
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<td>CO 150</td>
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<td>MATH 160</td>
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<td>Historical Perspectives</td>
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<td><strong>Total Credits</strong></td>
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### Sophomore

Select one group from the following:

**Group A:**
- CS 163 or 164 Java (CS1) No Prior Programming
- CS 163 or 164 Java (CS1) Prior Programming

**Group B:**
- CS 155 Introduction to Unix
- CS 156 Introduction to C Programming I

In addition, to complete Group B, select at least two of the following:
- CS 157 Introduction to C Programming II
- CS 158/MATH 158 Mathematical Algorithms in C
- MATH 151 Mathematical Algorithms in Matlab I
- MATH 152 Mathematical Algorithms in Maple
- MATH 261 Calculus for Physical Scientists III
- MATH 301 Introduction to Combinatorial Theory
- MATH 369 Linear Algebra I
- PH 141 Physics for Scientists and Engineers I (GT-SC1)
- PH 142 Physics for Scientists and Engineers II (GT-SC1)
- STAT 315 Statistics for Engineers and Scientists

Select one course from the following:
- STAT 341 Statistical Data Analysis I
- STAT 400 Statistical Computing
- STAT 420 Probability and Mathematical Statistics I

| **Total Credits** | 30 |

### Junior

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<td>MATH 450 Introduction to Numerical Analysis I</td>
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<td>MATH 451 Introduction to Numerical Analysis II</td>
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Electives

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Senior

Select one group from the following:

Group A:
MATH 332 Partial Differential Equations
MATH 417 Advanced Calculus I

Group B:
MATH 360 Mathematics of Information Security
MATH 460 Information and Coding Theory
MATH 435 Projects in Applied Mathematics

Mathematical Sciences2

Related Area3

Electives4

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Total Credits

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Electives

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</table>

Total Credits

<table>
<thead>
<tr>
<th></th>
<th>120</th>
</tr>
</thead>
</table>

1 Select from the list of courses (in a department other than Physics) in category 3A in the AUCC.
2 Select from upper-division MATH, CS, STAT courses, except those ending in –80 to –99.
3 A coherent set of courses outside the Mathematics Department in which mathematics is applied, approved by the concentration coordinator.
4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Mathematics major # Applied Mathematics Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester: MATH 117, MATH 118, MATH 124, MATH 125, MATH 126. A minimum grade of C is required in all Mathematics, Statistics, and Computer Science courses that are required by the major.

Freshman

Semester 1

<table>
<thead>
<tr>
<th></th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>1</td>
<td></td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td></td>
<td>X</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3B</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3D</td>
<td></td>
<td>3</td>
</tr>
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</tr>
<tr>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 117, MATH 118, MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.</td>
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</table>

Total Credits

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Semester 2

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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 161</td>
<td>X</td>
<td></td>
<td>1B</td>
<td>4</td>
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<tr>
<td></td>
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<td>3</td>
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<td>3E</td>
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<td></td>
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<td>3C</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

CO 150, MATH 160 must be completed by the end of Semester 2.

Total Credits

<table>
<thead>
<tr>
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Sophomore

Semester 3

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<tr>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 261</td>
<td>X</td>
<td></td>
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<td>4</td>
</tr>
<tr>
<td>MATH 301</td>
<td>X</td>
<td></td>
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</tbody>
</table>
Major in Mathematics, Applied Mathematics Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>X</td>
<td></td>
<td>3A</td>
<td>5</td>
</tr>
<tr>
<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

MATH 161 must be completed by the end of Semester 3.

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Total Credits</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Select one group from the following:

**Group A:**
- CS 163 or 164  Java (CS1) No Prior Programming
- Java (CS1) Prior Programming

**Group B:**
- CS 155  Introduction to Unix
- CS 156  Introduction to C Programming I

In addition, to complete Group B, select at least two of the following:
- CS 157  Introduction to C Programming II
- CS 158  Mathematical Algorithms in C
- MATH 158
- MATH 151  Mathematical Algorithms in Matlab I
- MATH 152  Mathematical Algorithms in Maple
- MATH 369  Linear Algebra I

PH 142  Physics for Scientists and Engineers II (GT-SC1)

Select one course from the following:
- STAT 341  Statistical Data Analysis I
- STAT 400  Statistical Computing
- STAT 420  Probability and Mathematical Statistics I

MATH 261, PH 141 must be completed by the end of Semester 4.

<table>
<thead>
<tr>
<th>Junior</th>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 345</td>
<td>Differential Equations</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 450</td>
<td>Introduction to Numerical Analysis I</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>Elective</td>
<td></td>
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<tr>
<td>Related Area (See Concentration Coordinator)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MATH 369 must be completed by the end of Semester 5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Total Credits</td>
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<td></td>
<td></td>
<td></td>
<td>15</td>
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<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 317</td>
<td>Advanced Calculus of One Variable</td>
<td>X</td>
<td>4B</td>
<td>4</td>
</tr>
<tr>
<td>MATH 451</td>
<td>Introduction to Numerical Analysis II</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td>3A</td>
<td>3</td>
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<tr>
<td>Mathematical Science Elective</td>
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<tr>
<td>Related Area (See Concentration Coordinator)</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 345 must be completed by the end of Semester 6.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Total Credits</td>
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<table>
<thead>
<tr>
<th>Senior</th>
<th>Semester 7</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 360</td>
<td>Mathematics of Information Security</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MATH 417</td>
<td>Advanced Calculus I</td>
<td></td>
<td></td>
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</tbody>
</table>

Electives
- 4

Mathematical Science Elective
- 3

Related Area (See Concentration Coordinator)
- 3
MATH 450 must be completed by the end of Semester 7.

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MATH 332</td>
<td>Partial Differential Equations</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>MATH 460</td>
<td>Information and Coding Theory</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 435</td>
<td>Projects in Applied Mathematics</td>
<td>X</td>
<td>4C</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Related Area (See Concentration Coordinator)</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>The benchmark courses for the 8th semester are the remaining courses in the entire program of study.</td>
<td>X</td>
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</tbody>
</table>

Total Credits 15

Program Total Credits: 120

**Major in Mathematics, Computational Mathematics Concentration**

The Computational Mathematics Concentration prepares students both for graduate work in mathematics and careers in industry. It is similar to the Applied Mathematics Concentration; however, the course work in this concentration emphasizes the use of numerical methods in applied mathematics.

**Requirements**

**Effective Fall 2015**

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

A minimum grade of C is required in all mathematics, statistics, and computer science courses which are required for graduation.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>MATH 160</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>MATH 161</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>PH 141</td>
<td>3A</td>
<td>5</td>
</tr>
<tr>
<td>STAT 192</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 30

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 160</td>
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<td>4</td>
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<tr>
<td>CS 161</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 261</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 331</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 369</td>
<td>4A</td>
<td>3</td>
</tr>
<tr>
<td>PH 142</td>
<td>3A</td>
<td>5</td>
</tr>
<tr>
<td>STAT 315</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Global Cultural Awareness</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
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</tbody>
</table>

Total Credits 31

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CS 200</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 317</td>
<td>4B</td>
<td>4</td>
</tr>
</tbody>
</table>
MATH 332  Partial Differential Equations  3
MATH 345  Differential Equations  4
MATH 450  Introduction to Numerical Analysis I  3
MATH 451  Introduction to Numerical Analysis II  3
Biological and Physical Sciences\(^1\)  3A  3-5
Electives  3

**Total Credits**  27-29

**Senior**

JTC 300  Professional and Technical Communication (GT-CO3)  2  3
Select one course from the following:  3
ECE 430/MATH 430  Fourier and Wavelet Analysis with Apps
MATH 417  Advanced Calculus I
MATH 419  Introduction to Complex Variables
MATH 435  Projects in Applied Mathematics  4C  3
STAT 321  Elementary Probabilistic-Stochastic Modeling  3
Electives\(^2\)  18-20

**Total Credits**  30-32

**Program Total Credits:**  120

---

1. Select from the list of courses (in a department other than Physics) in category 3A in the AUCC.
2. Select enough elective credits to bring program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

---

**Major Completion Map**

The Major Completion Map for this concentration will be published in the 17-18 General Catalog. Students should consult with their Advisor or visit the Department for the current Major Completion Map requirements.

---

**Major in Mathematics, General Mathematics Concentration**

General Mathematics is a Liberal Arts program designed to provide a solid foundation in mathematics with the flexibility to explore and develop expertise in other academic fields. Because of its flexibility, this concentration is well suited for students who want to combine mathematics with such fields as business, law, computer science, or statistics.

---

**Requirements**

**Effective Spring 2017**

A minimum grade of C is required in all mathematics, statistics, and computer science courses which are required for graduation.

---

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
<td>4</td>
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<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192</td>
<td>First Year Seminar in Mathematical Sciences</td>
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<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Electives</td>
<td></td>
<td>3-4</td>
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</tbody>
</table>

**Total Credits**  30-31

**Sophomore**

Select one group from the following:  4
<table>
<thead>
<tr>
<th>Group A:</th>
<th>Java (CS1) No Prior Programming</th>
<th>Java (CS1) Prior Programming</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 163 or 164</td>
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</table>

<table>
<thead>
<tr>
<th>Group B:</th>
<th>Introduction to Unix</th>
<th>Introduction to C Programming I</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 155</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS 156</td>
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</tbody>
</table>

In addition, to complete Group B, select at least two of the following:

<table>
<thead>
<tr>
<th>CS 157</th>
<th>Introduction to C Programming II</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 158/MATH 158</td>
<td>Mathematical Algorithms in C</td>
</tr>
<tr>
<td>MATH 151</td>
<td>Mathematical Algorithms in Matlab I</td>
</tr>
<tr>
<td>MATH 152</td>
<td>Mathematical Algorithms in Maple</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MATH 235</th>
<th>Introduction to Mathematical Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
</tr>
<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
</tr>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
</tr>
<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
</tr>
<tr>
<td>STAT 303 or 315</td>
<td>Introduction to Communications Principles</td>
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<td></td>
<td>Statistics for Engineers and Scientists</td>
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**Advanced Writing**

<table>
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**Junior**

Select one from the following:

<table>
<thead>
<tr>
<th>MATH 317</th>
<th>Advanced Calculus of One Variable</th>
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</thead>
<tbody>
<tr>
<td>MATH 417</td>
<td>Advanced Calculus I</td>
</tr>
<tr>
<td>MATH 340 or 345</td>
<td>Introduction to Ordinary Differential Equations</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>MATH 360</th>
<th>Mathematics of Information Security</th>
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</thead>
<tbody>
<tr>
<td>MATH 366</td>
<td>Introduction to Abstract Algebra</td>
</tr>
<tr>
<td>MATH 466</td>
<td>Abstract Algebra I</td>
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</table>

**Biological and Physical Sciences**

<table>
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<tr>
<th>Total Credits</th>
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<tr>
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**Mathematical Sciences Electives**

<table>
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<tbody>
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**Electives**

<table>
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<th>Total Credits</th>
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**Senior**

Select one from the following:

<table>
<thead>
<tr>
<th>MATH 417</th>
<th>Advanced Calculus I</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 418</td>
<td>Advanced Calculus II</td>
</tr>
<tr>
<td>MATH 466</td>
<td>Abstract Algebra I</td>
</tr>
<tr>
<td>MATH 467</td>
<td>Abstract Algebra II</td>
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</table>

**Mathematical Sciences Electives**

<table>
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**Electives**

<table>
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<tr>
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<td>14-16</td>
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</table>

**Program Total Credits:**

<table>
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<tr>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
</tr>
</tbody>
</table>

---

1. At least 12 credits of ALL upper division MATH courses must be at the 400-level or above.
2. These courses are in addition to the 18 credits of Mathematical Sciences Electives required in footnote 1, and may not be used to fulfill the Mathematical Sciences Electives requirement.
3. Select a non-physics course from category 3A in the AUCC.
4. Select 18 credits from upper division (300-400 level) MATH, CS, or STAT courses, except those courses ending in -80 to -99. At least 9 of the 18 credits must be from upper division MATH courses.
Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for the Mathematics major, General Mathematics Concentration assumes students enter prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. A minimum grade of C is required in all Mathematics, Statistics, and Computer Science courses which are required by the major.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>X 1A</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 160 Calculus for Physical Scientists I (GT-MA1)</td>
<td>X 1B</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 192 First Year Seminar in Mathematical Sciences</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
</tbody>
</table>

Pre-Calculus Requirements must be completed by the end of Semester 1, if needed. (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126). X

| Total Credits | 14 |

### Semester 2

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 161 Calculus for Physical Scientists II (GT-MA1)</td>
<td>X 1B</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CO 150 and MATH 160 must be completed by the end of Semester 2. X

| Total Credits | 16 |

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 261 Calculus for Physical Scientists III</td>
<td>X</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 369 Linear Algebra I</td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PH 141 Physics for Scientists and Engineers I (GT-SC1)</td>
<td></td>
<td>3A</td>
<td>5</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

MATH 161 must be completed by the end of Semester 3. X

| Total Credits | 15 |

### Semester 4

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 142 Physics for Scientists and Engineers II (GT-SC1)</td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>MATH 235 Introduction to Mathematical Reasoning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

- STAT 303 Introduction to Communications Principles
- STAT 315 Statistics for Engineers and Scientists

Introductory Programming Selection (See List on Concentration Requirements Tab).

MATH 261 and MATH 369 must be completed by the end of Semester 4. X

| Total Credits | 14 |

### Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td>X</td>
<td></td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>MATH 317 Advanced Calculus of One Variable</td>
<td></td>
<td>4B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 417 Advanced Calculus I</td>
<td></td>
<td>4B,4C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following:

<p>| | | 4A | 3 |</p>
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 360</td>
<td>Mathematics of Information Security</td>
<td>4A</td>
</tr>
<tr>
<td>MATH 366</td>
<td>Introduction to Abstract Algebra</td>
<td>4A</td>
</tr>
<tr>
<td>MATH 466</td>
<td>Abstract Algebra I</td>
<td>4A,4C</td>
</tr>
</tbody>
</table>

**Electives**

**Total Credits**: 9

**Semester 6**

Select one course from the following:

- MATH 340: Introduction to Ordinary Differential Equations
- MATH 345: Differential Equations

**Critical** | **Recommended** | **AUCC** | **Credits**
---|---|---|---
|             |               |          | 4 |

**Biological and Physical Sciences**

- 3A

**Mathematical Sciences Electives (See Concentration Requirements Tab)**

- 6

**Elective**

- 2

MATH 317 and MATH 360 or MATH 366 or MATH 466 must be completed by the end of Semester 6.

**Total Credits**: 15-16

**Senior**

**Semester 7**

Select one course from the following:

- MATH 417: Advanced Calculus I
- MATH 418: Advanced Calculus II
- MATH 466: Abstract Algebra I
- MATH 467: Abstract Algebra II

**Mathematical Sciences Electives (See Concentration Requirements Tab)**

- 6

**Electives**

- 6

**Total Credits**: 15

**Semester 8**

**Mathematical Sciences Electives (See Concentration Requirements Tab)**

- X

**Electives**

- X

**The benchmark courses for the 8th semester are the remaining courses in the entire program of study.**

**Total Credits**: 16

**Program Total Credits**: 120

---

**Major in Mathematics, Mathematics Education Concentration**

The Mathematics Education Concentration is designed to prepare students to teach mathematics through the high school level, including Advanced Placement and International Baccalaureate courses. The program provides the subject matter, education classes, and classroom experience required for secondary education licensure in Colorado.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (http://www.cep.chhs.colostate.edu) and the College of Health and Human Sciences section for general information.

**Requirements**

**Effective Spring 2017**

A minimum grade of C is required in all mathematics, statistics, and computer science courses which are required for graduation.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one group from the following:

**Group A**:

- CS 163 or 164: Java (CS1) No Prior Programming
- Java (CS1) Prior Programming

**Group B**
Major in Mathematics, Mathematics Education Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CS 155</td>
<td>Introduction to Unix</td>
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</tr>
<tr>
<td>CS 156</td>
<td>Introduction to C Programming I</td>
<td></td>
</tr>
<tr>
<td>CS 157</td>
<td>Introduction to C Programming II</td>
<td></td>
</tr>
<tr>
<td>CS 158/MATH 158</td>
<td>Mathematical Algorithms in C</td>
<td></td>
</tr>
<tr>
<td>MATH 151</td>
<td>Mathematical Algorithms in Matlab I</td>
<td></td>
</tr>
<tr>
<td>MATH 152</td>
<td>Mathematical Algorithms in Maple</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 192</td>
<td>First Year Seminar in Mathematical Sciences</td>
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<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
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<td>Global and Cultural Awareness</td>
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<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
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<td></td>
<td>Electives</td>
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<td></td>
<td>Total Credits</td>
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**Sophomore**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDUC 275</td>
<td>Schooling in the United States (GT-SS3)</td>
<td>3C</td>
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<tr>
<td>EDUC 340</td>
<td>Literacy and the Learner</td>
<td>3</td>
</tr>
<tr>
<td>MATH 230</td>
<td>Discrete Mathematics for Educators</td>
<td>3</td>
</tr>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>4</td>
</tr>
<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
<td>3</td>
</tr>
<tr>
<td>PH 141¹</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td></td>
<td>Advanced Writing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Biological and Physical Sciences¹</td>
<td>3A</td>
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<tr>
<td></td>
<td>Electives</td>
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**Junior**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EDUC 331</td>
<td>Educational Technology and Assessment</td>
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<tr>
<td>EDUC 350</td>
<td>Instruction I-Individualization/Management</td>
<td>3</td>
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<tr>
<td>EDUC 386</td>
<td>Practicum-Instruction I</td>
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<tr>
<td>EDUC 464</td>
<td>Methods and Materials in Teaching Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>MATH 317</td>
<td>Advanced Calculus of One Variable</td>
<td>4B</td>
</tr>
<tr>
<td>MATH 366</td>
<td>Introduction to Abstract Algebra</td>
<td>4A</td>
</tr>
<tr>
<td>MATH 470</td>
<td>Euclidean and Non-Euclidean Geometry</td>
<td>3</td>
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<tr>
<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
<td>3</td>
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<td></td>
<td>Additional Biological and Physical Sciences¹</td>
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<td></td>
<td>Mathematical Sciences Elective²</td>
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<tr>
<td></td>
<td>Elective</td>
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<td></td>
<td>Total Credits</td>
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**Senior**

<table>
<thead>
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<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
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<tr>
<td>EDUC 485B</td>
<td>Student Teaching: Secondary</td>
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<tr>
<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
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<tr>
<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
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<td>MATH 425</td>
<td>History of Mathematics</td>
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<td></td>
<td>Electives</td>
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<td></td>
<td>Total Credits</td>
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</table>

Program Total Credits: 120
Students in this major must take a minimum of 13 credits from at least two subject codes selected from category 3A, Biological and Physical Sciences, in the All-University Core Curriculum (AUCC). At least one course must include a laboratory.

Select from STAT 420, STAT 430, or upper-division mathematics courses except those ending in -80 to -99.

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER:
The curriculum for the Mathematics major – Education Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. A minimum grade of C is required in all Mathematics, Statistics, and Computer Science courses that are required by the major.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td></td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td></td>
<td></td>
<td>X</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 192</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Pre-Calculus Requirements must be completed by the end of Semester 1, if needed. (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126).</td>
<td></td>
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Total Credits 15

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 161</td>
<td></td>
<td>X</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>Introductory Programming Selection (See List on Concentration Requirements Tab).</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
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<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
<td>3</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>CO 150 and MATH 160 must be completed by the end of Semester 2.</td>
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</table>

Total Credits 15

**Sophomore**

<table>
<thead>
<tr>
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<th>AUCC</th>
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<tbody>
<tr>
<td>EDUC 275</td>
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<td>X</td>
<td>3C</td>
<td>3</td>
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<tr>
<td>MATH 230</td>
<td></td>
<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PH 141</td>
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<tr>
<td>Elective</td>
<td></td>
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<td></td>
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<tr>
<td>MATH 161 must be completed by the end of Semester 3.</td>
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<td></td>
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Total Credits 14

<table>
<thead>
<tr>
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<td>MATH 261</td>
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<td>4</td>
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<tr>
<td>MATH 369</td>
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<td>X</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Advanced Writing</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td></td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>MATH 230 must be completed by the end of Semester 4.</td>
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Total Credits 17

**Junior**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 331</td>
<td></td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>
Major in Mathematics, Mathematics of Information Concentration

The Mathematics of Information Concentration prepares students for graduate study and/or an interdisciplinary career in information/communication technology where mathematics, computer science, and electrical engineering are interwoven. Students in this concentration receive training in cryptology, both source and channel coding theory, related courses in the companion fields, as well as the other core science and mathematics courses.

Requirements

Effective Fall 2015

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

A minimum grade of C is required in all mathematics, statistics, and computer science courses which are required for graduation.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>CS 155</td>
<td>Introduction to Unix</td>
<td></td>
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</tr>
<tr>
<td>CS 156</td>
<td>Introduction to C Programming I</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>ECE 103</td>
<td>DC Circuit Analysis</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>MATH 192</td>
<td>First Year Seminar in Mathematical Sciences</td>
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<tr>
<td>STAT 192</td>
<td>First-Year Seminar in Statistics</td>
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</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td>3C</td>
<td></td>
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<tr>
<td><strong>Total Credits</strong></td>
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<td><strong>30</strong></td>
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**Sophomore**

<table>
<thead>
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<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ECE 202</td>
<td>Circuit Theory Applications</td>
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<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
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<tr>
<td>MATH 151</td>
<td>Mathematical Algorithms in Matlab I</td>
<td>1</td>
</tr>
<tr>
<td>MATH 152</td>
<td>Mathematical Algorithms in Maple</td>
<td>1</td>
</tr>
<tr>
<td>MATH 158/CS 158</td>
<td>Mathematical Algorithms in C</td>
<td>1</td>
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<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>4</td>
</tr>
<tr>
<td>MATH 345</td>
<td>Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
<td>4A</td>
</tr>
<tr>
<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Humanities</td>
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<td>3B</td>
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<tr>
<td>Electives</td>
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**Junior**

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<tr>
<th>Course Code</th>
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<tr>
<td>ECE 311</td>
<td>Linear System Analysis I</td>
<td>3</td>
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<tr>
<td>MATH 317</td>
<td>Advanced Calculus of One Variable</td>
<td>4</td>
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<tr>
<td>MATH 360 or 366</td>
<td>Mathematics of Information Security</td>
<td>3</td>
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<tr>
<td>Electrostatics and Magnetic</td>
<td>Complex Systems Principle</td>
<td>3A</td>
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<tr>
<td>Electrical Engineering/Mathematical Science Elective</td>
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<tr>
<td>Electives</td>
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**Senior**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECE 312</td>
<td>Linear System Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 460</td>
<td>Information and Coding Theory</td>
<td>4C</td>
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<tr>
<td>Select one from the following:</td>
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<tr>
<td>STAT 303/ECE 303</td>
<td>Introduction to Communications Principles</td>
<td>3</td>
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<tr>
<td>STAT 321</td>
<td>Elementary Probabilistic-Stochastic Modeling</td>
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<tr>
<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
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<tr>
<td>Electrical Engineering/Mathematical Science Electives</td>
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<tr>
<td>Electives</td>
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</table>

**Program Total Credits:**

120

1. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).
2. Students in this concentration may need to obtain a prerequisite override from the appropriate department to enroll in this course.
3. Select two courses from the list of courses in category 3A in the A.U.C.C. One course must include a lab. Courses must be selected from two different subject codes.
4. Select a total of 12 credits from (A) and (B), with 6 or more coming from (A):
   A. upper-division mathematics courses except those ending in −80 to −99;
   B. upper-division ECE, CS, MATH, or STAT courses, except those ending in −80 to −99.
Major Completion Map

The Major Completion Map for this concentration will be published in the 17-18 General Catalog. Students should consult with their Advisor or visit the Department for the current Major Completion Map requirements.

Minor in Mathematics

The Mathematics Department offers a minor in mathematics for those students who wish to acquire a more extensive knowledge of mathematical sciences in support of their personal interests or of their major area of study.

Requirements

Effective Fall 2016

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required in each MATH, STAT, and CS course required for the minor in mathematics.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
<td></td>
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<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td></td>
</tr>
<tr>
<td>MATH 255</td>
<td>Calculus for Biological Scientists II (GT-MA1)</td>
<td></td>
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<tr>
<td>Group B:</td>
<td></td>
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</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td></td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<tr>
<td>Group C:</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<tr>
<td>MATH 271</td>
<td>Applied Mathematics for Chemists I</td>
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<td>Choose 6-7 credits from the following:</td>
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<tr>
<td>MATH 229</td>
<td>Matrices and Linear Equations</td>
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<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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<tr>
<td>MATH 272</td>
<td>Applied Mathematics for Chemists II</td>
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<tr>
<td>Upper-Division Mathematics Electives</td>
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<tr>
<td>(300- to 400-level MATH courses)</td>
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</table>

Total Credits 23

1 At least 3 credits must be from the upper-division (300- to 400-level) courses.
2 Courses ending in –80 to –99 cannot be used to satisfy upper-division (300- to 400-level) requirements.

Minor in Mathematical Biology

The minor in Mathematical Biology is designed for students of the life sciences who wish to acquire a broader base of quantitative expertise in support of their major area of study.

Requirements

Effective Fall 2011

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C is required in all mathematics, statistics, and computer science courses including all MATH, STAT, or CS joint-listed courses required for the minor in mathematical biology.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
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<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
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<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td></td>
</tr>
<tr>
<td>MATH 255</td>
<td>Calculus for Biological Scientists II (GT-MA1)</td>
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<tr>
<td>Group B:</td>
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<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td></td>
</tr>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
<td>3</td>
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<tr>
<td>or STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
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<tr>
<td>MATH 348/</td>
<td>Theory of Population and Evolutionary</td>
<td>4</td>
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<tr>
<td>BZ 348</td>
<td>Ecology</td>
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<tr>
<td>MATH 455</td>
<td>Mathematics in Biology and Medicine</td>
<td>3</td>
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<tr>
<td>Total Credits</td>
<td>21</td>
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</tr>
</tbody>
</table>

Department of Physics

Office in Engineering Building, Room 124
(970) 491-6206
physics.colostate.edu (http://www.physics.colostate.edu)

Professor Jacob Roberts, Chair

Undergraduate Majors

• Major in Physics
  • Applied Physics Concentration
**Minors**
- Minor in Physics

**Graduate Programs in Physics**
Graduate programs in Physics and Applied Physics lead to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Physics (http://www.physics.colostate.edu).

**Master Programs**
- Master of Science in Physics, Plan A*
- Master of Science in Physics, Plan B*

**Ph.D.**
- Ph.D. in Physics*

* Please see department for program of study.

**Courses**
Subjects in this department include: Astronomy (AA) and Physics (PH).

### Astronomy (AA)

**AA 100  Introduction to Astronomy (GT-SC2) Credits: 3 (3-0-0)**
**Course Description:** Description of the various objects found in the heavens as well as the principles and techniques employed in investigations of these objects.
**Prerequisite:** None.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.
**Additional Information:** Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

**AA 101  Astronomy Laboratory (GT-SC1) Credit: 1 (0-2-0)**
**Course Description:** Observations of the various objects found in the heavens with 5-inch reflecting telescope.
**Prerequisite:** AA 100, may be taken concurrently.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.
**Additional Information:** Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

**AA 150  Observational Astronomy Credits: 3 (2-3-0)**
**Course Description:** Astronomical objects in the night and day sky; observation with 16-inch telescope.
**Prerequisite:** None.
**Registration Information:** Must register for lecture and laboratory.
**Term Offered:** Summer.
**Grade Modes:** S/U within Student Option, Trad within Student Option.
**Special Course Fee:** No.

**AA 301  Astrophysics I Credits: 5 (4-2-0)**
**Course Description:** Celestial mechanics, earth-moon systems, planets and satellites, interplanetary medium, origin of solar system.
**Prerequisite:** (MATH 124) and (MATH 126) and (PH 110 or PH 121 or PH 141).
**Registration Information:** Must register for lecture and laboratory.
**Term Offered:** Fall (odd years).
**Grade Modes:** S/U within Student Option, Trad within Student Option.
**Special Course Fee:** No.

**AA 302  Astrophysics II Credits: 5 (4-2-0)**
**Course Description:** Properties of sun and stars, variable stars, binary and multiple star systems, star clusters, interstellar medium, stellar evolution.
**Prerequisite:** (MATH 124) and (MATH 126) and (PH 110 or PH 121 or PH 141).
**Registration Information:** Must register for lecture and laboratory.
**Term Offered:** Spring (odd years).
**Grade Mode:** Traditional.
**Special Course Fee:** No.

**AA 303  Astrophysics III Credits: 5 (4-2-0)**
**Course Description:** Properties of the Milky Way, galaxies, quasars and related objects; special and general relativity; cosmology.
**Prerequisite:** (MATH 124) and (MATH 126) and (PH 110 or PH 121 or PH 141).
**Registration Information:** Must register for lecture and laboratory.
**Term Offered:** Fall (even years).
**Grade Modes:** S/U within Student Option, Trad within Student Option.
**Special Course Fee:** No.

**AA 495  Independent Study in Astrophysics Credits: Var[1-6] (0-0-0)**
**Course Description:**
**Prerequisite:** None.
**Registration Information:** Written consent of instructor.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Instructor Option.
**Special Course Fee:** No.

### Physics (PH)

**PH 110  Descriptive Physics (GT-SC2) Credits: 3 (3-0-0)**
**Course Description:** Conceptual aspects of physics applied to phenomena in everyday life and to problems in other fields of science.
**Prerequisite:** None.
**Registration Information:** Credit not allowed for both PH 110 and PH 121.
**Terms Offered:** Fall, Spring.
**Grade Mode:** Traditional.
**Special Course Fee:** No.
**Additional Information:** Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

**PH 111  Descriptive Physics Laboratory (GT-SC1) Credit: 1 (0-2-0)**
**Course Description:** Experiments dealing with basic physics concepts including explorations of everyday phenomena.
**Prerequisite:** PH 110, may be taken concurrently.
**Terms Offered:** Fall, Spring.
**Grade Mode:** Traditional.
**Special Course Fee:** No.
**Additional Information:** Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).
PH 121  General Physics I (GT-SC1)  Credits: 5 (3-2-1)
Course Description: Concepts of force, torque, energy, momentum, work used to cover fluids, waves, sound, temperature, heat; biological, physical examples (noncalculus).
Prerequisite: MATH 125, may be taken concurrently or MATH 155, may be taken concurrently or MATH 157, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, laboratory and recitation. Credit not allowed for both PH 121 and PH 110; or for both PH 121 and PH 141.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 122  General Physics II (GT-SC1)  Credits: 5 (3-2-1)
Course Description: Electricity including electrostatics and simple circuits; magnetism; optics; nuclear physics, radiation; biological, physical examples (noncalculus).
Prerequisite: PH 121 or PH 141.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both PH 122 and PH 142.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 141  Physics for Scientists and Engineers I (GT-SC1)  Credits: 5 (3-2-1)
Course Description: Forcse, energy, momentum, angular momentum, oscillations, waves, heat, thermodynamics (calculus based).
Prerequisite: MATH 126, may be taken concurrently and MATH 155, may be taken concurrently or MATH 155, may be taken concurrently or MATH 159, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, laboratory and recitation. Credit not allowed for both PH 141 and PH 121.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 142  Physics for Scientists and Engineers II (GT-SC1)  Credits: 5 (3-2-1)
Course Description: Electricity and magnetism, circuits, light, optics (calculus based).
Prerequisite: (PH 141) and (MATH 161, may be taken concurrently or MATH 255, may be taken concurrently or MATH 271, may be taken concurrently).
Registration Information: Must register for lecture, laboratory and recitation. Credit not allowed for both PH 142 and PH 122.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 192  The Flying Circus of Physics  Credits: 2 (0-0-2)
Course Description: Richness and variety of physical phenomena; physical world view including appreciation for the academic community.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 245  Introduction to Electronics  Credits: 3 (2-3-0)
Course Description: AC circuits, physical bases and applications of electronic devices.
Prerequisite: MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 293  Selected Topics in Physics  Credit: 1 (1-0-0)
Course Description: Selected topics in physics with emphasis on depth of understanding.
Prerequisite: PH 142.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PH 298  Introductory Research  Credits: Var[1-6] (0-0-0)
Course Description: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 314  Introduction to Modern Physics  Credits: 4 (4-0-0)
Course Description: Relativity; quantum mechanics; atomic structure; applications to solid-state, nuclear, and elementary particle physics.
Prerequisite: (MATH 261, may be taken concurrently) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 315  Modern Physics Laboratory  Credits: 2 (0-4-0)
Course Description: Experiments in modern physics.
Prerequisite: PH 314, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 327  Analytical Techniques for Physics  Credits: 3 (3-0-0)
Course Description: Applications to physics of curvilinear coordinate systems, line/surface integrals, linear algebra, ordinary/partial differential eqs., probability.
Prerequisite: (MATH 261) and (MATH 340 or MATH 345) and (PH 142 and PH 314).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 341  Mechanics  Credits: 4 (4-0-0)
Course Description: Particle dynamics, translation and rotation of rigid bodies, moving coordinate systems, Lagrangian mechanics, matrix and tensor methods.
Prerequisite: (MATH 340 or MATH 345) and (PH 141).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 351 Electricity and Magnetism Credits: 4 (4-0-0)
Course Description: Electrostatics, magnetostatics, currents, time-dependent electric and magnetic fields, radiation.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 352 Introductory Quantum Mechanics I Credits: 3 (3-0-0)
Course Description: Schrodinger's theory of wave mechanics, potential wells, harmonic oscillators, wave packets, operators, angular momentum.
Prerequisite: (MATH 340 or MATH 345) and (PH 314).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 353 Optics and Waves Credits: 4 (3-3-0)
Course Description: Geometrical optics; wave optics; interference, diffraction, and polarization; quantum optics.
Prerequisite: MATH 261 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 354 Introductory Quantum Mechanics II Credits: 3 (3-0-0)
Course Description: Approximation techniques, perturbation theory, identical particles and spin, structure and spectra of atoms and molecules, hydrogen atom.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 355 Statistical Physics Credits: 3 (3-0-0)
Course Description: Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein distribution functions; kinetic theory; applications to solids, metals, semiconductors, and gases.
Prerequisite: MATH 340 and PH 314 and PH 361.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 361 Physical Thermodynamics Credits: 3 (3-0-0)
Course Description: Laws of thermodynamics; thermodynamic potentials; applications such as fluids, phase transitions, electrical and magnetic systems, binary mixtures.
Prerequisite: MATH 261 and PH 142.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 362 Statistical Physics Credits: 3 (3-0-0)
Course Description: Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein distribution functions; kinetic theory; applications to solids, metals, semiconductors, and gases.
Prerequisite: MATH 340 and PH 314 and PH 361.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Participation as a physics tutor.
Prerequisite: PH 121 or PH 141.
Registration Information: Written consent of department chair required. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PH 421 Advanced Physics Laboratory Credits: 2 (0-4-0)
Course Description: Advanced experiments in electricity and magnetism, statistical physics and quantum mechanics.
Prerequisite: PH 315 and PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 422 Introductory Laser Laboratory Credit: 1 (0-2-0)
Course Description: Experiments providing hands-on experiences with lasers.
Prerequisite: PH 521, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PH 492 Seminar Credit: 1 (0-0-1)
Course Description: Preparation and presentation of seminars on selected modern topics.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
PH 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PH 498 Research Credits: Var[1-6] (0-0-0)
Course Description: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PH 517 Chaos, Fractals, and Nonlinear Dynamics Credits: 3 (3-0-0)
Course Description: Strange attractors, fractal dimensions, Lyapunov exponents, multifractal spectrum, period doubling, universality, intermittency, time-delay embedding.
Prerequisite: (MATH 261 and PH 341) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PH 521 Introduction to Lasers Credit: 1 (0-2-0)
Course Description: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PH 531  Introductory Solid State Physics  Credits: 3 (3-0-0)
Course Description: Crystal structures and bonding, electronic levels and vibrations, dielectric, optical and magnetic properties, quasiparticles, superconductivity.
Prerequisite: PH 451 and PH 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 561  Elementary Particle Physics  Credits: 3 (3-0-0)
Course Description: Particle interactions and detection techniques. Quark model, scattering models and standard model of electroweak interactions, physics of colliders.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 571  Mathematical Methods for Physics I  Credits: 3 (3-0-0)
Course Description: Vector analysis, eigenvalues and eigenvectors, infinite series, method of Frobenius, complex variables, contour integration.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 572  Mathematical Methods for Physics II  Credits: 3 (3-0-0)
Course Description: Partial differential equations, Sturm-Liouville theory, special functions, Green's functions, Fourier series, Fourier and Laplace transforms.
Prerequisite: PH 571.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 621  Classical Mechanics  Credits: 3 (3-0-0)
Course Description: Central forces, scattering, noninertial reference frames, Coriolis force, Lagrange's and Hamilton's equations, small oscillations, continuum mechanics.
Prerequisite: (PH 341) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 631  Solid State Physics  Credits: 3 (3-0-0)
Course Description: Electronic band structure and conduction phenomena; cohesive energy; lattice dynamics and thermal properties; metals; insulators; semiconductors.
Prerequisite: PH 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 641  Electromagnetism I  Credits: 3 (3-0-0)
Course Description: Electrostatics in a vacuum and a medium, general solution of Laplace's equation, Green's functions, magnetostatics in a vacuum and a medium.
Prerequisite: (PH 351) and (PH 572).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 642  Electromagnetism II  Credits: 3 (3-0-0)
Course Description: Maxwell's equations, electromagnetic waves, radiation by accelerated charges, special relativity, Lagrangian formulation of electromagnetism.
Prerequisite: PH 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 651  Quantum Mechanics I  Credits: 3 (3-0-0)
Course Description: WKB theory, Heisenberg picture, 3D wells, hydrogen atom, time-independent perturbation theory, angular momentum and spin, Clebsch-Gordan coefficients.
Prerequisite: (PH 452) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 652  Quantum Mechanics II  Credits: 3 (3-0-0)
Course Description: Canonical and grand-canonical ensembles; Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; density operator; Bose-Einstein condensation.
Prerequisite: (PH 452 and PH 462) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 671  Statistical Mechanics  Credits: 3 (3-0-0)
Course Description: Canonical and grand-canonical ensembles; Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; density operator; Bose-Einstein condensation.
Prerequisite: (PH 452 and PH 462) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 672  Principles of Semiconductors  Credits: 3 (3-0-0)
Also Offered As: ECE 672.
Course Description: Electronic properties of semiconductors; band structure, statistics, transport properties, photoelectric properties, potential barriers, interfaces.
Prerequisite: PH 531 or ECE 471B.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PH 672 and ECE 672.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 692  Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
PH 693  Current Topics in Physics Research  Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 698  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 722  Quantum Electronics  Credits: 3 (3-0-0)
Course Description: One- and two-photon spectroscopy; broadening mechanisms; nonlinear optics; coherent phenomena; experimental methods.
Prerequisite: PH 521.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 731  Condensed Matter Theory  Credits: 3 (3-0-0)
Course Description: Second quantization; electrons; phonons; electron-phonon interaction; superconductivity; magnetism; spin waves; density-functional methods; symmetry.
Prerequisite: (PH 462) and (PH 531) and (PH 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 762  Elementary Particle Theory  Credits: 3 (3-0-0)
Course Description: Symmetries, electrodynamics, renormalization, and the running coupling constant. Hadron structure, QCD, gauge symmetry and electroweak interaction.
Prerequisite: PH 561 and PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 770  Quantum Theory  Credits: 3 (3-0-0)
Course Description: Formal scattering theory; relativistic quantum mechanics, quantum theory of radiation, symmetries and statistics, many-body theory.
Prerequisite: PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 784  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Supervised teaching of general physics laboratory and recitation sections.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793A  Seminar: Condensed Matter Physics  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793B  Seminar: Laser Spectroscopy/Quantum Electronics  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793C  Seminar: Statistical Mechanics  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793D  Seminar: Mathematical Physics  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793E  Seminar: High Energy Physics  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
PH 795  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Physics

Physics is the study of motion, matter, and energy. It is the most fundamental of sciences, and provides the essential underpinning for chemistry, biology, astronomy, and geology. Physicists probe the structure of atomic nuclei, study exotic states of matter that occur at ultra-low temperatures, and develop theories that predict the origin and destiny of the universe. Physics has practical applications to a wide variety of tasks such as fabricating very large scale integrated circuits, producing high efficiency solar cells, and developing nanomachines, high-power lasers, and scanners for imaging activity within the human brain. Fundamental research in physics has led to many important inventions, including the transistor, the computer, the flat panel display, and the cell phone.

The Physics Major begins with an emphasis on fundamentals in the basic sciences and mathematics to provide students with a broad foundation. Subsequent course work is designed to develop analytical and experimental abilities that allow students to solve problems involving the technical applications of physics. The curriculum includes courses on classical mechanics, modern physics, quantum mechanics, electricity and magnetism, and thermodynamics. A strong liberal arts program rounds out the major and provides educational breadth. Two concentrations are offered: Physics and Applied Physics.

Learning Outcomes

Graduates will:

• Obtain a solid background in experimental physics and basic theoretical physics and will be able to work in a variety of technological or problem-oriented fields.

• Have the contemporary skills and knowledge necessary for entry-level positions in the field or for admission to graduate or professional schools.

• Be able to apply a range of physical and mathematical tools to a diverse set of physical problems encountered in the real world. They will be able to use a variety of laboratory techniques, critically interpret experimental results, and design appropriate new experiments.

• Have the ability to critically evaluate and solve a variety of physical problems, and to present their analysis and results to colleagues in both written and oral form.

Potential Occupations

Almost all Physics majors are able to find work after graduation in an occupation related to physics. Physicists find employment in industry in electronics, computers, medical technology, engineering-related fields, quality control, and sales. Others teach high school physics. Physics graduates possess excellent math skills that are useful in business and finance as well. Those earning graduate degrees can work in college teaching and at industrial, government, and academic research labs. Participation in undergraduate research is strongly encouraged since it enhances practical training and expands employment opportunities. Graduates who go on for advanced studies can attain more responsible positions with the possibility of rising to top professional levels.

Career opportunities include, but are not limited to: research physicist, health physicist, nuclear medical technologist, pollution control technician, environmental health technician, air pollution analyst, hydrologist, laser technician, high school physics teacher, scientific illustrator, crime laboratory analyst, patent examiner, quality control technician, spectroscopist, photo-optics technician, data processing systems analyst, computer programmer, motors and controls tester, engineering supplies sales representative, electronics and/or communications equipment representative, precision instruments sales representative, and technical writer.

Concentrations

• Applied Physics Concentration
• Physics Concentration

Major in Physics, Applied Physics Concentration

The applied physics concentration combines fundamental course work in physics with a selection of courses in a related discipline. Seven options are available. The electronics, semiconductors, and optics option, and the materials and fluids option are designed for students interested in rapidly changing technology or in areas that overlap the boundaries of traditional engineering disciplines. The computers option provides the background needed for the application of modern computer technology to problems in physics, the development of new types of computers, and jobs in computer programming. The chemistry option combines thorough knowledge of both chemistry and physics, which is useful in such interdisciplinary areas as materials science, surface science, and studies of molecular systems. The medical physics option and the biophysics option prepare students for further study in medical physics (the application of physics technologies to medical practice) and health physics (radiation safety and protection). The geophysics option prepares students for fields such as geothermal energy and volcanology.

Requirements

Effective Fall 2016

Each course used to meet requirements of the concentration need a minimum grade of C-, including courses to satisfy AUCC Categories 1, 2, and 3A.
### Freshman

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Select one group from the following:

**Group A:**
- CS 155: Introduction to Unix
- CS 156: Introduction to C Programming I
- CS 157: Introduction to C Programming II

**Group B:**
- CS 163 or 164: Java (CS1) No Prior Programming
- Java (CS1) Prior Programming

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**Total Credits:** 30-31

### Sophomore

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<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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Select one from the following:

- MATH 340: Introduction to Ordinary Differential Equations
- MATH 345: Differential Equations
- PH 245: Introduction to Electronics
- PH 293: Selected Topics in Physics
- PH 314: Introduction to Modern Physics
- PH 315: Modern Physics Laboratory

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<td>Historical Perspectives</td>
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**Total Credits:** 29

### Junior

Select one from the following:

- CHEM 301: Advanced Scientific Writing–Chemistry (GT-CO3)
- CO 300: Writing Arguments (GT-CO3)
- CO 301B: Writing in the Disciplines: Sciences (GT-CO3)
- LB 300: Specialized Professional Writing
- PH 341: Mechanics
- PH 351: Electricity and Magnetism
- PH 353: Optics and Waves
- PH 361: Physical Thermodynamics

Select either

- PH 327: Analytical Techniques for Physics
- Electives

Or

- Technical Electives List 1 (select a minimum of 3 credits)
- Technical Electives List 2 (select a minimum of 3 credits)
- Electives

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**Total Credits:** 30
### Senior

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<td>PH 492</td>
<td>Seminar</td>
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Select one Field from the lists below (Select a minimum of 12 credits from a minimum of four courses)

Electives

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<td>Program Total Credits:</td>
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### Technical Electives List 1 (select a minimum of 3 credits not taken elsewhere in the program)

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<td>Momentum Transfer and Mechanical Separations</td>
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<td>Heat and Mass Transfer Fundamentals</td>
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MATH 405  Introduction to Number Theory  3
MATH 419  Introduction to Complex Variables  3
MATH 450  Introduction to Numerical Analysis I  3
MATH 451  Introduction to Numerical Analysis II  3
MATH 466  Abstract Algebra I  3
MATH 467  Abstract Algebra II  3
MATH 470  Euclidean and Non-Euclidean Geometry  3
MATH 472  Introduction to Topology  3
MATH 474  Introduction to Differential Geometry  3
MECH 331  Introduction to Engineering Materials  4
MECH 344  Heat and Mass Transfer  3
MECH 460  Aeronautics  3
MECH 468  Space Propulsion and Power Engineering  3
PH 517  Chaos, Fractals, and Nonlinear Dynamics  3
PH 521  Introduction to Lasers  3
PH 522  Introductory Laser Laboratory  1
PH 531  Introductory Solid State Physics  3
PH 561  Elementary Particle Physics  3
PH 571  Mathematical Methods for Physics I  3
PH 572  Mathematical Methods for Physics II  3
STAT 315  Statistics for Engineers and Scientists  3
STAT 321  Elementary Probabilistic-Stochastic Modeling  3
STAT 340  Multiple Regression Analysis  3
STAT 420  Probability and Mathematical Statistics I  3
STAT 421  Introduction to Stochastic Processes  3
STAT 430  Probability and Mathematical Statistics II  3
STAT 460  Applied Multivariate Analysis  3

Technical Electives List 2 (select a minimum of 3 credits not taken elsewhere in the program)

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<td>CIVE 300</td>
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### Major in Physics, Applied Physics Concentration

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<td>Elementary Particle Physics</td>
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<td>PH 571</td>
<td>Mathematical Methods for Physics I</td>
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<tr>
<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
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<tr>
<td>STAT 321</td>
<td>Elementary Probabilistic-Stochastic Modeling</td>
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<td>STAT 340</td>
<td>Multiple Regression Analysis</td>
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<td>Probability and Mathematical Statistics I</td>
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<td>STAT 421</td>
<td>Introduction to Stochastic Processes</td>
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<td>STAT 430</td>
<td>Probability and Mathematical Statistics II</td>
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<td>STAT 460</td>
<td>Applied Multivariate Analysis</td>
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### Biophysics Field

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<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<tr>
<td>BC 411</td>
<td>Physical Biochemistry</td>
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<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
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<td>BC 464</td>
<td>Molecular Genetics Recitation</td>
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<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
<td>3</td>
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<td>BC 467</td>
<td>Biochemistry of Disease</td>
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<td>BIOM 421</td>
<td>Transport Phenomena in Biomedical Engineering</td>
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<td>Kinetics of Biomolecular and Cellular Systems</td>
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<td>Biomechanics and Biomaterials</td>
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<td>BIOM 526</td>
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<td>BZ 310</td>
<td>Cell Biology</td>
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<td>Introduction to Radiation Biology</td>
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<td>ERHS 530</td>
<td>Radiological Physics and Dosimetry I</td>
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<td>ERHS 531</td>
<td>Nuclear Instruments and Measurements</td>
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<td>ERHS 550</td>
<td>Principles of Radiation Biology</td>
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<td>MIP 300</td>
<td>General Microbiology</td>
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<td>Microbial Genetics</td>
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### Chemistry Field

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<td>Comprehensive Biochemistry Laboratory</td>
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<td>Physical Biochemistry</td>
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<tr>
<td>CHEM 245</td>
<td>Fundamentals of Organic Chemistry</td>
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<td>CHEM 246</td>
<td>Fundamentals of Organic Chemistry Laboratory</td>
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<td>Fundamentals of Inorganic Chemistry</td>
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<td>CHEM 335</td>
<td>Introduction to Analytical Chemistry</td>
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<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
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### CHEM Field

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<td>CHEM 344</td>
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<td>CHEM 440</td>
<td>Advanced Organic Chemistry Laboratory</td>
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<td>CHEM 461</td>
<td>Inorganic Chemistry</td>
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<td>CHEM 462</td>
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<td>CHEM 474</td>
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### Computers Field

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<tbody>
<tr>
<td>CS 220</td>
<td>Discrete Structures and their Applications</td>
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<tr>
<td>CS 253</td>
<td>Software Development with C++</td>
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<tr>
<td>CS 270</td>
<td>Computer Organization</td>
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<tr>
<td>CS 314</td>
<td>Software Engineering</td>
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<tr>
<td>CS 320</td>
<td>Algorithms–Theory and Practice</td>
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<td>CS 356</td>
<td>Systems Security</td>
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<td>CS 370</td>
<td>Operating Systems</td>
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<tr>
<td>CS 410</td>
<td>Introduction to Computer Graphics</td>
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<tr>
<td>CS 414</td>
<td>Object-Oriented Design</td>
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<tr>
<td>CS 420</td>
<td>Introduction to Analysis of Algorithms</td>
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<td>CS 430</td>
<td>Database Systems</td>
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<tr>
<td>CS 435</td>
<td>Introduction to Big Data</td>
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<tr>
<td>CS 440</td>
<td>Introduction to Artificial Intelligence</td>
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<tr>
<td>CS 453</td>
<td>Introduction to Compiler Construction</td>
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<tr>
<td>CS 454</td>
<td>Principles of Programming Languages</td>
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<tr>
<td>CS 455</td>
<td>Introduction to Distributed Systems</td>
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<tr>
<td>CS 457</td>
<td>Computer Networks and the Internet</td>
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<tr>
<td>CS 470</td>
<td>Computer Architecture</td>
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<td>CS 475</td>
<td>Parallel Programming</td>
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<tr>
<td>ECE 251</td>
<td>Introduction to Microprocessors</td>
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<td>ECE 423</td>
<td>DSP for Communications</td>
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<td>ECE 450</td>
<td>Digital System Design Laboratory</td>
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<td>ECE 451</td>
<td>Digital System Design</td>
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<td>ECE 452</td>
<td>Computer Organization and Architecture</td>
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<td>Database Computers</td>
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<td>ECE 456</td>
<td>Computer Networks</td>
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<tr>
<td>MATH 360</td>
<td>Mathematics of Information Security</td>
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<td>MATH 460</td>
<td>Information and Coding Theory</td>
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</table>

### Custom Field

Specific courses forming a coherent program are selected by the student in consultation with their academic advisor and subject to approval of the Key Advisor. Only 3 credits from each AA and CS course counts towards the 12 credit requirement.

### Electronics, Semiconductors, and Optics Field

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<td>ECE 311</td>
<td>Linear System Analysis I</td>
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<td>ECE 312</td>
<td>Linear System Analysis II</td>
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<td>ECE 331</td>
<td>Electronics Principles I</td>
<td>4</td>
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<tr>
<td>ECE 332</td>
<td>Electronics Principles II</td>
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<tr>
<td>ECE 404</td>
<td>Experiments in Optical Electronics</td>
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Major in Physics, Applied Physics Concentration

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<tr>
<td>ECE 411</td>
<td>Control Systems</td>
<td>4</td>
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<tr>
<td>ECE 412</td>
<td>Digital Control and Digital Filters</td>
<td>3</td>
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<tr>
<td>ECE 421</td>
<td>Telecommunications I</td>
<td>3</td>
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<tr>
<td>ECE 422</td>
<td>Telecommunications II</td>
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<td>ECE 430</td>
<td>Fourier and Wavelet Analysis with Apps</td>
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<td>ECE 441</td>
<td>Optical Electronics</td>
<td>3</td>
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<td>ECE 444</td>
<td>Antennas and Radiation</td>
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<tr>
<td>ECE 457</td>
<td>Fourier Optics</td>
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<td>ECE 471A</td>
<td>Semiconductor Physics</td>
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<td>ECE 471B</td>
<td>Semiconductor Junctions</td>
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<td>ECE 472</td>
<td>MOS Integrated Circuits</td>
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<tr>
<td>ECE 546</td>
<td>Laser Fundamentals and Devices</td>
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**Geophysics Field**

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<tr>
<td>CIVE 413</td>
<td>Environmental River Mechanics</td>
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<tr>
<td>GEOL 232</td>
<td>Mineralogy</td>
<td>3</td>
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<tr>
<td>GEOL 250</td>
<td>The Solid Earth</td>
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<tr>
<td>GEOL 332</td>
<td>Optical Mineralogy</td>
<td>2</td>
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<tr>
<td>GEOL 344</td>
<td>Stratigraphy and Sedimentology</td>
<td>4</td>
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<tr>
<td>GEOL 372</td>
<td>Structural Geology</td>
<td>4</td>
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<td>GEOL 442</td>
<td>Applied Geophysics</td>
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<td>GEOL 446</td>
<td>Environmental Geology</td>
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<td>Geomorphology</td>
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<td>GEOL 530</td>
<td>Advanced Petrology</td>
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<td>GEOL 570</td>
<td>Plate Tectonics</td>
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**Materials and Fluids Field**

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<tr>
<td>CBE 331</td>
<td>Momentum Transfer and Mechanical Separations</td>
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<td>CBE 332</td>
<td>Heat and Mass Transfer Fundamentals</td>
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<tr>
<td>CIVE 300</td>
<td>Fluid Mechanics</td>
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<td>CIVE 301</td>
<td>Fluid Mechanics Laboratory</td>
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<td>CIVE 363</td>
<td>Material Properties</td>
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<td>CIVE 401</td>
<td>Hydraulic Engineering</td>
<td>3</td>
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<td>CIVE 413</td>
<td>Environmental River Mechanics</td>
<td>3</td>
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<tr>
<td>MECH 331</td>
<td>Introduction to Engineering Materials</td>
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<tr>
<td>MECH 338</td>
<td>Thermal/Fluid Sciences Laboratory</td>
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<td>MECH 342</td>
<td>Mechanics and Thermodynamics of Flow Processes</td>
<td>3</td>
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<td>MECH 344</td>
<td>Heat and Mass Transfer</td>
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<td>MECH 460</td>
<td>Aeronautics</td>
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<tr>
<td>PH 531</td>
<td>Introductory Solid State Physics</td>
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**Medical Physics Field**

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<td>BC 467</td>
<td>Biochemistry of Disease</td>
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<td>BIOM 421</td>
<td>Transport Phenomena in Biomedical Engineering</td>
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<tr>
<td>BIOM 422</td>
<td>Kinetics of Biomolecular and Cellular Systems</td>
<td>3</td>
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<td>BIOM 470</td>
<td>Biomedical Engineering</td>
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<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<td>BMS 325</td>
<td>Cellular Neurobiology</td>
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<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<tr>
<td>CHEM 433</td>
<td>Clinical Chemistry</td>
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</table>
Major Completion Map

Distinctive Requirements for Degree Program:

Required PH courses above the 100-Level (with the exception of PH 293 and, if there is sufficient demand, PH 314) are offered only Fall or Spring, not both. A grade of C- or better is required in all courses used to meet requirements of the major, except for unrestricted electives and courses taken to satisfy All-University Core Curriculum (AUCC) categories 3B, 3C, 3D, and 3E. Many courses in a Selected Field list have prerequisites outside the Department of Physics. Any student considering the Applied Physics concentration should meet with an advisor as soon as possible. Note that PH 327 may be replaced by three credits from each of the two Technical Electives Lists.

Freshman

Semester 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
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<td>1A</td>
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<tr>
<td>MATH 160</td>
<td></td>
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<tr>
<td>PH 141</td>
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<td>3A</td>
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Majors and Humanities

Total Credits: 15

Select one group from the following:

Group A:

- CS 155 Introduction to Unix
- CS 156 Introduction to C Programming I
- CS 157 Introduction to C Programming II

Group B:

- CS 163 or 164 Java (CS1) No Prior Programming
  - Java (CS1) Prior Programming
- MATH 161 Calculus for Physical Scientists II (GT-MA1)
- PH 142 Physics for Scientists and Engineers II (GT-SC1)

Arts and Humanities

Total Credits: 3-4

Sophomore

Semester 3

<table>
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<tr>
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<tr>
<td>CHEM 111</td>
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Total Credits: 15
| CHEM 112 | General Chemistry Lab I (GT-SC1) | 3A | 1 |
| MATH 261 | Calculus for Physical Scientists III | X | 4 |
| PH 245 | Introduction to Electronics | 3 |
| PH 293 | Selected Topics in Physics | 1 |
| Historical Perspectives | 3D | 3 |

MATH 161 and PH 142 must be completed by the end of Semester 3.

| **Semester 4** | Critical | Recommended | AUCC | Credits |
| Select one course from the following: |  |  |  |  |
| MATH 340 | Introduction to Ordinary Differential Equations | X | 4 |
| MATH 345 | Differential Equations |  |
| PH 314 | Introduction to Modern Physics | X | 4 |
| PH 315 | Modern Physics Laboratory | X | 2 |
| Social and Behavioral Sciences | 3C | 3 |

MATH 261 must be completed by the end of Semester 4.

| **Junior** | Critical | Recommended | AUCC | Credits |
| PH 341 | Mechanics | X | 4 |
| PH 353 | Optics and Waves | X | 4 |

Select one group from the following:

**Group A:**
- PH 327 | Analytical Techniques for Physics |  |
- Elective |  |

**Group B:**
- Technical Electives List 1 (Select a minimum of 3 credits from List on Concentration Requirements Tab)
- Technical Electives List 2 (Select a minimum of 3 credits from List on Concentration Requirements Tab)

MATH 340 and PH 245 must be completed by the end of Semester 5.

| **Semester 5** | Critical | Recommended | AUCC | Credits |
| Select one course from the following: |  |  |  |  |
| CHEM 301 | Advanced Scientific Writing--Chemistry (GT-CO3) | 2 |
| CO 300 | Writing Arguments (GT-CO3) | 2 |
| CO 301B | Writing in the Disciplines: Sciences (GT-CO3) | 2 |
| LB 300 | Specialized Professional Writing | 2 |
| Global and Cultural Awareness | 3E | 3 |
| Elective |  |
| PH 293, PH 314, and PH 315 must be completed by the end of Semester 6. | X |  |  |

| **Semester 6** | Critical | Recommended | AUCC | Credits |
| Select one course from the following: |  |  |  |  |
| CHEM 301 | Advanced Scientific Writing--Chemistry (GT-CO3) | 2 |
| CO 300 | Writing Arguments (GT-CO3) | 2 |
| CO 301B | Writing in the Disciplines: Sciences (GT-CO3) | 2 |
| LB 300 | Specialized Professional Writing | 2 |
| Global and Cultural Awareness | 3E | 3 |
| Elective |  |
| PH 293, PH 314, and PH 315 must be completed by the end of Semester 6. | X |  |  |

| **Senior** | Critical | Recommended | AUCC | Credits |
| PH 451 | Introductory Quantum Mechanics I | X | 4A,4B | 3 |
| Selected Field (See Lists on Concentration Requirements Tab) |  |
| Electives |  |
| PH 341 and PH 353 must be completed by the end of Semester 7. | X |  |  |

| **Semester 7** | Critical | Recommended | AUCC | Credits |
| PH 425 | Advanced Physics Laboratory | X | 4C | 2 |
PH 492 Seminar  X  4C  1
Selected Field (See Lists on Concentration Requirements Tab)  X  6
Electives  X  7
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits  16
Program Total Credits:  120

Major in Physics, Physics Concentration

The physics concentration provides a broad background in physics that serves as a base for later specialization, either in graduate school or on the job. It is designed for those seeking greater insight into physics and an introduction to more advanced topics and methods. Students who obtain a degree in physics with the physics concentration are prepared for a career in industry or government, or for advanced study at the graduate level.

Requirements

Effective Fall 2016

Each course used to meet requirements of the concentration need a minimum grade of C-, including courses to satisfy AUCC Categories 1, 2, and 3A.

Freshman

<table>
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<tr>
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<th>Credits</th>
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<tbody>
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<tr>
<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
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<tr>
<td>CS 155</td>
<td>Introduction to Unix</td>
<td>3 - 4</td>
</tr>
<tr>
<td>CS 156</td>
<td>Introduction to C Programming I</td>
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<tr>
<td>CS 157</td>
<td>Introduction to C Programming II</td>
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<tr>
<td>Group B:</td>
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<td>CS 163 or 164</td>
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<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<td>Physics for Scientists and Engineers I (GT-SC1)</td>
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<tr>
<td>Arts and Humanities</td>
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Total Credits  30-31

Sophomore

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<tr>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
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<td>Select one from the following:</td>
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<tr>
<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
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<tr>
<td>MATH 345</td>
<td>Differential Equations</td>
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<td>PH 245$^1$</td>
<td>Introduction to Electronics</td>
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<tr>
<td>PH 293</td>
<td>Selected Topics in Physics</td>
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<td>PH 314</td>
<td>Introduction to Modern Physics</td>
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<td>Modern Physics Laboratory</td>
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<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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Total Credits  29

Junior

Select one from the following.$^2$
### Major in Physics, Physics Concentration

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<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301B</td>
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<td>LB 300</td>
<td>Specialized Professional Writing</td>
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<td>PH 341</td>
<td>Mechanics</td>
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<tr>
<td>PH 351</td>
<td>Electricity and Magnetism</td>
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<tr>
<td>PH 353</td>
<td>Optics and Waves</td>
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<td>PH 361</td>
<td>Physical Thermodynamics</td>
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Select one group from the following: 9

**Group A:**
- PH 327 Analytical Techniques for Physics

**Group B:**
- Mathematics and Statistics List (select a minimum of 6 credits)

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<thead>
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<tr>
<td>MATH 317</td>
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<td>MATH 332</td>
<td>Partial Differential Equations</td>
<td>3</td>
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<td>Introduction to Abstract Algebra</td>
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<td>Linear Algebra I</td>
<td>3</td>
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<tr>
<td>MATH 419</td>
<td>Introduction to Complex Variables</td>
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<td>Fourier and Wavelet Analysis with Apps</td>
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<td>Statistics for Engineers and Scientists</td>
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<td>Elementary Probabilistic-Stochastic Modeling</td>
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<td>Probability and Mathematical Statistics I</td>
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<td>STAT 421</td>
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<td>Probability and Mathematical Statistics II</td>
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Total Credits: 30

**Senior**

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<td>PH 451</td>
<td>Introductory Quantum Mechanics I</td>
<td>4A,4B</td>
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<td>PH 452</td>
<td>Introductory Quantum Mechanics II</td>
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<td>PH 462</td>
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Total Credits: 30

Technical Course List (select at least two courses from the list below)

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Electives

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Total Credits: 12-13

**Total Credits: 30-31**

Program Total Credits: 120

### Mathematics and Statistics List (select a minimum of 6 credits not taken elsewhere in the program)

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</tr>
<tr>
<td>MATH 332</td>
<td>Partial Differential Equations</td>
<td>3</td>
</tr>
<tr>
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<td>Introduction to Abstract Algebra</td>
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<td>MATH 419</td>
<td>Introduction to Complex Variables</td>
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<td>Fourier and Wavelet Analysis with Apps</td>
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# Technical Course List (select a minimum of 6 credits from a minimum of 2 courses not taken elsewhere in the program)

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<td>Astrophysics II</td>
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<td>AA 303</td>
<td>Astrophysics III</td>
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<td>BC 411</td>
<td>Physical Biochemistry</td>
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<td>CBE 331</td>
<td>Momentum Transfer and Mechanical Separations</td>
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<td>CBE 332</td>
<td>Heat and Mass Transfer Fundamentals</td>
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<td>MATH 332</td>
<td>Partial Differential Equations</td>
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<td>MATH 366</td>
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<tr>
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<td>3</td>
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</tbody>
</table>

1. For students who change majors from Electrical Engineering or are double-majoring in Electrical Engineering, please see advisor for possible substitutions.
2. CHEM 301 and CO 301B are recommended. Other courses in All-University Core Curriculum (AUCC) Category 2 may be accepted as substitutes if they are taken prior to declaring the Physics major or are taken to meet requirements of another major.
3. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300-, 400-level).
4. Only 3 credits from this course are applied towards the Technical Electives requirement.

## Major Completion Map

### Distinctive Requirements for Degree Program:

Required PH courses above the 100-Level (with the exception of PH 293 and, if there is sufficient demand, PH 314) are offered only Fall or Spring, not both. A grade of C- or better is required in all courses used to meet requirements of the major, except for unrestricted electives and courses taken to satisfy All-University Core Curriculum (AUCC) categories 3B, 3C, 3D, and 3E. Note that PH 327 may be replaced by six credits from the Mathematics and Statistics Electives List.

### Freshman

**Semester 1**

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<td>1B</td>
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<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>X</td>
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<td>Arts and Humanities</td>
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Total Credits: 15

**Semester 2**

Select one group from the following:

**Group A:**

- CS 155  Introduction to Unix
- CS 156  Introduction to C Programming I
- CS 157  Introduction to C Programming II

**Group B:**

- CS 163 or 164  Java (CS1) No Prior Programming
- CS 164  Java (CS1) Prior Programming

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
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<tbody>
<tr>
<td>MATH 161</td>
<td>Calculus for Physical Scientists II (GT-MA1)</td>
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<td>1B</td>
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</table>
PH 142 Physics for Scientists and Engineers II (GT-SC1)  X  3A  5
Arts and Humanities  3B  3
CO 150, MATH 160, and PH 141 must be completed by the end of Semester 2.  X

| Total Credits | 15 |

**Sophomore**

**Semester 3**

<table>
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<tr>
<td>MATH 261 Calculus for Physical Scientists III</td>
<td>X</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PH 245 Introduction to Electronics</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PH 293 Selected Topics in Physics</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MATH 161 and PH 142 must be completed by the end of Semester 3.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 16 |

**Semester 4**

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
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<tr>
<td>MATH 340 Introduction to Ordinary Differential Equations</td>
<td>X</td>
<td></td>
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<tr>
<td>MATH 345 Differential Equations</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PH 314 Introduction to Modern Physics</td>
<td>X</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PH 315 Modern Physics Laboratory</td>
<td>X</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MATH 261 must be completed by the end of Semester 4.</td>
<td>X</td>
<td></td>
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</tbody>
</table>

| Total Credits | 13 |

**Junior**

**Semester 5**

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 341 Mechanics</td>
<td>X</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PH 353 Optics and Waves</td>
<td>X</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Select one group from the following:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PH 327 Analytical Techniques for Physics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Group B:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics and Statistics List (Select a minimum of 6 credits from List on Concentration Requirements Tab)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MATH 340 and PH 245 must be completed by the end of Semester 5.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 14 |

**Semester 6**

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 351 Electricity and Magnetism</td>
<td>X</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PH 361 Physical Thermodynamics</td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 301 Advanced Scientific Writing–Chemistry (GT-CO3)</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CO 300 Writing Arguments (GT-CO3)</td>
<td></td>
<td>2</td>
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<tr>
<td>CO 301B Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>2</td>
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<tr>
<td>LB 300 Specialized Professional Writing</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PH 293, PH 314, and PH 315 must be completed by the end of Semester 6.</td>
<td>X</td>
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</tbody>
</table>

| Total Credits | 16 |

**Senior**

**Semester 7**

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 451 Introductory Quantum Mechanics I</td>
<td>X</td>
<td>4A,4B</td>
<td>3</td>
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<tr>
<td>PH 462 Statistical Physics</td>
<td>X</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 16 |
Minor in Physics

Technical Course List (See Technical Course List on Concentration Requirements Tab)

Electives

PH 341 and PH 353 must be completed by the end of Semester 7.

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 425</td>
<td>X</td>
<td></td>
<td>4C</td>
<td>2</td>
</tr>
<tr>
<td>PH 452</td>
<td>X</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PH 492</td>
<td>X</td>
<td></td>
<td>4C</td>
<td>1</td>
</tr>
<tr>
<td>Technical Course List (See Technical Course List on Concentration Requirements Tab)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits 16

Program Total Credits: 120

Minor in Physics

Most technical fields require some background in physics. A minor in Physics could provide students with an increased understanding of the foundations of their chosen major. For students majoring in Computer Science and Mathematics, a minor in Physics provides experience in applying the skills acquired in their major to concrete physical problems.

Requirements

Effective Fall 2008

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C- is required in all physics courses required for the minor in physics.

<table>
<thead>
<tr>
<th>Code</th>
<th>Lower Division</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>5</td>
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</tr>
<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>5</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Upper Division</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 314</td>
<td>Introduction to Modern Physics</td>
<td>4</td>
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</tr>
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</table>

Select a minimum of 8 credits from the following, including at least five credits of PH courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AA 301</td>
<td>Astrophysics I</td>
<td></td>
</tr>
<tr>
<td>AA 302</td>
<td>Astrophysics II</td>
<td></td>
</tr>
<tr>
<td>AA 303</td>
<td>Astrophysics III</td>
<td></td>
</tr>
<tr>
<td>PH 315</td>
<td>Modern Physics Laboratory</td>
<td></td>
</tr>
<tr>
<td>PH 341</td>
<td>Mechanics</td>
<td></td>
</tr>
<tr>
<td>PH 351</td>
<td>Electricity and Magnetism</td>
<td></td>
</tr>
<tr>
<td>PH 353</td>
<td>Optics and Waves</td>
<td></td>
</tr>
<tr>
<td>PH 361</td>
<td>Physical Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>PH 425</td>
<td>Advanced Physics Laboratory</td>
<td></td>
</tr>
<tr>
<td>PH 451</td>
<td>Introductory Quantum Mechanics I</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 22

Any substitutions need approval of the key advisor.

Department of Psychology

Office in Behavioral Sciences Building, Room 201
(970) 491-3799
coastal.edu/Depts/Psychology (http://www.coastal.edu/Depts/Psychology)

Professor Don Rojas, Chair

Undergraduate Majors

- Major in Psychology
  - Addictions Counseling Concentration
  - Clinical/Counseling Psychology Concentration
  - General Psychology Concentration
  - Industrial/Organizational Concentration
  - Mind, Brain, and Behavior Concentration

Graduate Programs in Psychology

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and
the Department of Psychology. (http://www.colostate.edu/Depts/Psychology)

Master Programs

- Master of Applied Industrial/Organizational Psychology, Plan C
- Master of Science in Psychology, Plan A*
- Master of Science in Psychology, Plan B*

Ph.D.

- Ph.D. in Psychology*

* Please see department for program of study.

Courses

Psychology (PSY)

PSY 100 General Psychology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of psychology emphasizing empirical approaches; theories and research on learning, individual differences, perception, social behavior.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

PSY 121 Health and the Mind Credit: 1 (1-0-0)
Course Description: Maintenance of positive mental health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 152 Science of Learning Credits: 3 (3-0-0)
Course Description: The science of learning and remembering with an emphasis on strategies and methods that students can use to enhance their learning and studying.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C.

PSY 175 Developmental Psychology Across the Life Span Credits: 3 (0-0-3)
Also Offered As: HDFS 175.
Course Description: Theory and research on physical, cognitive, and psychosocial human development across the life span.
Prerequisite: None.
Registration Information: Offered as a telecourse only. Credit not allowed for both PSY 175 and HDFS 175.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 192 Psychology First-Year Seminar Credit: 1 (0-0-1)
Course Description: Special topics in psychology.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 210 Psychology of the Individual in Context Credits: 3 (3-0-0)
Course Description: Psychological explanations of cultural, social, and individual differences in behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 228 Psychology of Human Sexuality Credits: 3 (3-0-0)
Course Description: Physiology, psychology of human sexuality; cross cultural issues, development, social perspectives, values, sexual dysfunction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 250 Research Methods in Psychology Credits: 4 (4-0-0)
Course Description: Design, analysis, and reporting of psychological research.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 252 Mind, Brain, and Behavior Credits: 3 (3-0-0)
Course Description: Psychological, physiological, and evolutionary explanations of perception, cognition, and behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 260 Child Psychology Credits: 3 (3-0-0)
Course Description: Description and explanation of development of human behavior emphasizing theory and research concerned with infant and child.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 292A Seminar: Industrial/Organizational Credit: 1 (0-0-1)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PSY 292B Seminar: Mind, Brain & Behavior Credit: 1 (0-0-1)
Course Description: Review of research techniques in social psychology. Social psychological theory and research findings emphasizing research methodology; applications to contemporary social problems.
Prerequisite: PSY 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 292C Seminar: Controversial Issues in Psychology Credit: 1 (0-0-1)
Course Description: Application of psychologically-based interpersonal communication skills, for students seeking CACI certification.
Prerequisite: PSY 100 and PSY 310, may be taken concurrently.
Registration Information: Credit not allowed for both PSY 311A and PSY 311B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 311A Basic Counseling Skills Laboratory: CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills in drug addiction treatment, for students seeking CACI certification.
Prerequisite: PSY 100 and PSY 310, may be taken concurrently.
Registration Information: Credit not allowed for both PSY 311A and PSY 311B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 311B Basic Counseling Skills Laboratory: Non-CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills, for students who are not seeking CACI certification.
Prerequisite: (PSY 100) and (PSY 310, may be taken concurrently).
Registration Information: Credit not allowed for both PSY 311A and PSY 311B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 310 Basic Counseling Skills Credits: 3 (3-0-0)
Course Description: Psychologically-based interpersonal communication skills; rapport thinking, gathering information and bringing about change in others.
Prerequisite: PSY 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 315 Social Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research findings emphasizing research methodology; applications to contemporary social problems.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 316 Environmental Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research on effects of behavior on the environment; environmental influences on behavior.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 317 Social Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Review of research techniques in social psychology. Computer simulations with applications to contemporary social problems.
Prerequisite: PSY 250 and PSY 315, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 320 Abnormal Psychology Credits: 3 (3-0-0)
**Course Description:** Definition and description of behavior pathology, theory and research on factors in etiology and treatment of behavior disorders.
**Prerequisite:** PSY 100.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 325 Psychology of Personality Credits: 3 (3-0-0)
**Course Description:** Theory and research related to personality as a psychological concept; analytic, phenomenological, and behavioral views.
**Prerequisite:** PSY 100.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 327 Psychology of Women Credits: 3 (2-0-1)
**Course Description:** Contemporary theory and research focusing on emotional, cognitive, biosocial, and interpersonal contributions to female identity and sex role.
**Prerequisite:** PSY 100.
**Registration Information:** Must register for lecture and recitation.
**Terms Offered:** Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 330 Clinical and Counseling Psychology Credits: 3 (3-0-0)
**Course Description:** Conceptualization of clients, assessment, intervention techniques for behavior change, research methods, ethical issues.
**Prerequisite:** PSY 100.
**Term Offered:** Spring.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 335 Forensic Psychology Credits: 3 (3-0-0)
**Course Description:** The psychology of crime and criminal behavior, including theory on deviance, the criminal mind, and the root causes of violence in society.
**Prerequisite:** PSY 100.
**Registration Information:** Junior or senior standing. Sections may be offered: Online.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 340 Organizational Psychology Credits: 3 (3-0-0)
**Course Description:** Theories and research on interpersonal relations, work group processes, decision making, power, and change strategies within organizations.
**Prerequisite:** (PSY 250) and (STAT 301 or STAT 311).
**Registration Information:** Must have concurrent registration in PSY 341. Sections may be offered: Online.
**Terms Offered:** Fall, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 341 Organizational Psychology Laboratory Credit: 1 (0-2-0)
**Course Description:** Application of organizational psychology through simulations and field involvements.
**Prerequisite:** None.
**Registration Information:** Must have concurrent registration in PSY 340. Sections may be offered: Online.
**Term Offered:** Fall.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 350 Applied Research Methods in Psychology I Credits: 3 (3-0-0)
**Course Description:** Application of research methods concepts to design and conduct experiments.
**Prerequisite:** PSY 250 and STAT 311.
**Registration Information:** Enrollment in University Honors Program required.
**Term Offered:** Fall.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 352 Learning and Memory Credits: 3 (3-0-0)
**Course Description:** Research, theory, and applications concerning conditioning, learning, and retention in animals and humans.
**Prerequisite:** PSY 252.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 354 Human-Computer Interaction Credits: 3 (3-0-0)
**Course Description:** Theoretical and applied areas of psychology and computer science in the area of human-computer interaction.
**Prerequisite:** PSY 100.
**Terms Offered:** Fall, Spring.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 360 Psychology of Drug Addiction Treatment Credits: 3 (3-0-0)
**Course Description:** Psychological theory and method for treating substance use addictions.
**Prerequisite:** PSY 320.
**Registration Information:** Sections may be offered: Online.
**Terms Offered:** Fall, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 362 Professional Issues in Addiction Treatment Credits: 3 (3-0-0)
**Course Description:** Diversity, ethno-cultural, and ethical issues in drug addiction treatment.
**Prerequisite:** PSY 360, may be taken concurrently.
**Terms Offered:** Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.

PSY 364 Infectious Diseases and Substance Use Credits: 3 (0-0-3)
**Course Description:** Infectious disease transmission/progression related to substance use, risk assessment and treatment of substance users in alcohol and drug treatment.
**Prerequisite:** PSY 100.
**Registration Information:** Sections may be offered: Online.
**Terms Offered:** Fall, Spring, Summer.
**Grade Mode:** Traditional.
**Special Course Fee:** No.
PSY 370 Psychological Measurement and Testing Credits: 3 (3-0-0)
Course Description: Measurement theory including scale properties, reliability, and validity; construction and evaluation of psychological tests.
Prerequisite: (PSY 100) and (STAT 301 or STAT 311).
Registration Information: Must have concurrent registration in PSY 371.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 371 Psychological Measurement and Testing Laboratory Credit: 1 (0-2-0)
Course Description: Exercises and problems in test administration, norming, reliability, validity, and scale construction.
Prerequisite: None.
Registration Information: Must have concurrent registration in PSY 370.
Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 374 Honors Seminar: Current Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Research areas in psychology; reading and discussing current journal articles.
Prerequisite: PSY 100 and PSY 250.
Registration Information: Enrollment in University Honors Program required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair. Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements. Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 385 Supervised Practical Experience in Psychological Measurement Credits: Var[1-3] (0-0-0)
Course Description: Psychophysical and psychometric methods used in the measurement of psychological traits and abilities.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair. Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements. Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 386 Psychological Measurement and Testing Laboratory Credit: 1 (2-0-0)
Course Description: Exercises and problems in test administration, norming, reliability, validity, and scale construction.
Prerequisite: None.
Registration Information: Must have concurrent registration in PSY 384.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 387 Psychological Measurement and Testing Laboratory Credit: 1 (2-0-0)
Course Description: Exercises and problems in test administration, norming, reliability, validity, and scale construction.
Prerequisite: None.
Registration Information: Must have concurrent registration in PSY 386.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.


PSY 394 Honors Seminar: Current Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Research areas in psychology; reading and discussing current journal articles.
Prerequisite: PSY 100 and PSY 250.
Registration Information: Enrollment in University Honors Program required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 395A-F, PSY 396A-F, PSY 398A-F, PSY 399A-F; enrollment limited to one per student per semester.

PSY 401 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 402 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 403 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 404 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 405 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 406 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 407 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 408 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 409 History and Systems of Psychology Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 410 Psychobiology of Addictions Credits: 3 (3-0-0)
Course Description: Biological basis of the psychology of addictions.
Prerequisite: PSY 250 and PSY 252.
Restriction: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 411 Psychobiology of Addictions Credits: 3 (3-0-0)
Course Description: Biological basis of the psychology of addictions.
Prerequisite: PSY 250 and PSY 252.
Restriction: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 412 Psychobiology of Addictions Credits: 3 (3-0-0)
Course Description: Biological basis of the psychology of addictions.
Prerequisite: PSY 250 and PSY 252.
Restriction: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 413 Psychobiology of Addictions Credits: 3 (3-0-0)
Course Description: Biological basis of the psychology of addictions.
Prerequisite: PSY 250 and PSY 252.
Restriction: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 437 Psychology of Gender Credits: 3 (3-0-0)
Course Description: Psychology of gender in cultural context.
Prerequisite: PSY 210.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 440 Industrial Psychology Credits: 3 (3-0-0)
Course Description: The application of psychological theories and principles to understand how people behave in the workplace and to improve workers’ productivity and well-being.
Prerequisite: PSY 250 and (STAT 301 or STAT 311).
Registration Information: Must have concurrent registration in PSY 441.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 441 Industrial Psychology Laboratory Credit: 1 (0-2-0)
Course Description: Hands-on experience with concepts such as job analysis, performance appraisals, interviews, and training, designed to supplement information provided in PSY 440.
Prerequisite: None.
Registration Information: Must have concurrent registration in PSY 440.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 450 Applied Research Methods in Psychology II Credits: 4 (3-2-0)
Course Description: Interpretation and reporting of psychological research findings.
Prerequisite: PSY 350.
Registration Information: Must register for lecture and laboratory. Enrollment in University Honors Program required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 452 Cognitive Psychology Credits: 3 (3-0-0)
Course Description: Human thinking processes as related to perception, attention, memory, knowledge representation, reasoning, decision making, and problem solving.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 453  Cognitive Psychology Laboratory  Credits: 2  (0-4-0)
Course Description: Exercises in laboratory research in perceptual processes, attention, memory, language, problem solving, and decision making.
Prerequisite: PSY 452, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 454  Biological Psychology Credits: 3  (3-0-0)
Course Description: Research and theory on the biological basis of behavior.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 455  Biological Psychology Laboratory Credits: 2  (0-4-0)
Course Description: Laboratory exercises in biological psychology.
Prerequisite: PSY 454, may be taken concurrently and PSY 250.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 456  Sensation and Perception Laboratory Credits: 2  (0-4-0)
Course Description: Laboratory exercises in biological psychology.
Prerequisite: PSY 455, may be taken concurrently and PSY 250.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 457  Sensation and Perception Credits: 3  (3-0-0)
Course Description: Review of research on physiological substrates of sensation; methods of scaling sensory experience; role of perception in behavioral adaptation.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 458  Cognitive Neuroscience Laboratory Credits: 2  (0-4-0)
Course Description: Laboratory exercises in cognitive neuroscience.
Prerequisite: PSY 457, may be taken concurrently and PSY 250.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 459  Cognitive Neuroscience Credits: 3  (3-0-0)
Course Description: Review of the human brain and its mediation of cognitive processes.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 460  Child Exceptionality and Psychopathology Credits: 3  (3-0-0)
Course Description: Definition and description of child exceptionality and psychopathology; theory and research in etiology, educational implications, and treatment.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 465  Adolescent Psychology Credits: 3  (3-0-0)
Course Description: Contemporary theory and research on adolescence including physiological and psychological changes, social influences.
Prerequisite: PSY 100.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 484  Supervised College Teaching Credits: Var[1-3]  (0-0-0)
Course Description: Advanced supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 485  Practicum Credits: Var[1-3]  (0-0-0)
Course Description: Supervised work experience in approved psychological setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 486  Practicum Credits: Var[1-3]  (0-0-0)
Course Description: Supervised work experience in approved psychological setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 487  Internship Credits: Var[1-3]  (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
PSY 488 Field Placement Credits: Var[1-3] (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Enrollment restricted to students in the Addictions Counseling Concentration or Counseling/Clinical Concentration. Written consent of instructor. Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

PSY 492A Seminar: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option, Traditional.
Special Course Fee: No.

PSY 492B Seminar: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492C Seminar: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492D Seminar: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492E Seminar: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492F Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 495A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495C Independent Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
PSY 495E Independent Study: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in perceptual and brain sciences within psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496C Group Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496D Group Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496A Group Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496B Group Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496F Group Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
PSY 498A Research: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in applied social psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498B Research: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in cognitive psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498C Research: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in counseling/clinical psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498D Research: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498E Research: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual and brain sciences within psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498F Research: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in topics in psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498G Research: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in applied social psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499B Thesis: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in cognitive psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499C Thesis: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in counseling/clinical psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499D Thesis: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499E Thesis: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual and brain sciences within psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 496A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.

Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 515 Women's Health Credits: 3 (3-0-0)
Course Description: Current issues in women's health.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 517 Perspectives in Global Health Credits: 3 (0-0-3)
Also Offered As: IE 517.
Course Description: Science, skills, and beliefs directed at the maintenance and improvement of health for all people.
Prerequisite: None.
Registration Information: Credit not allowed for both PSY 517 and IE 517.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 550 Responsible Conduct of Psychological Research Credit: 1 (1-0-0)
Course Description: Application of professional norms and research ethics in the conduct of psychological research.
Prerequisite: None.
Registration Information: Graduate standing or consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 595A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
PSY 596A Group Study: Applied Social Psychology  Credits:  
Var[1-3] (0-0-0)  
**Course Description:** Collective investigation of a topic in applied social psychology under direction of faculty.  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  

PSY 596B Group Study: Cognitive Psychology  Credits: Var[1-3] (0-0-0)  
**Course Description:** Collective investigation of a topic in cognitive psychology under direction of faculty.  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  

PSY 596C Group Study: Counseling/Clinical Psych  Credits: Var[1-3] (0-0-0)  
**Course Description:** Collective investigation of a topic in counseling/clinical psychology under direction of faculty.  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  

PSY 596D Group Study: Industrial/Organizational Psych  Credits: Var[1-3] (0-0-0)  
**Course Description:** Collective investigation of a topic in industrial/organizational psychology under direction of faculty.  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  

PSY 596E Group Study: Perceptual/Brain Sciences  Credits: Var[1-3] (0-0-0)  
**Course Description:** Collective investigation of a topic in perceptual and brain sciences under direction of faculty.  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  

PSY 596F Group Study: Special Topics in Psychology  Credits: Var[1-3] (0-0-0)  
**Course Description:** Collective investigation of a special topic in psychology under direction of faculty.  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  

PSY 600A Advanced Psychology: History  Credits: 3 (3-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

PSY 600B Advanced Psychology: Cognitive Neuroscience  Credits: 3 (3-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

PSY 600C Advanced Psychology: Neuropsychology  Credits: 3 (3-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

PSY 600D Advanced Psychology: Sensation and Perception  Credits: 3 (3-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

PSY 600E Advanced Psychology: Animal Learning  Credits: 3 (3-0-0)  
**Course Description:**  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

PSY 600F Advanced Psychology: Human Learning and Memory  Credits: 3 (3-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

PSY 600G Advanced Psychology: Social  Credits: 3 (3-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

PSY 600H Advanced Psychology: Lifespan Development  Credits: 3 (3-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.
PSY 600I Advanced Psychology: Personality Credits: 3 (3-0-0)
Course Description:
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600J Advanced Psychology: Health Psychology Credits: 3 (3-0-0)
Course Description:
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600K Advanced Psychology: Measurement Credits: 3 (3-0-0)
Course Description:
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 600K and PSY 605.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600L Advanced Psychology: Human Performance, Motor and Intellectual Capacities Credits: 3 (3-0-0)
Course Description:
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600M Advanced Psychology: Cognitive Processes Credits: 3 (3-0-0)
Course Description:
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 601 Measurement Laboratory Credit: 1 (0-2-0)
Course Description: Laboratory experience using measurement concepts and procedures.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 605 Applied Measurement Theory Credits: 3 (0-0-3)
Course Description: Study and application of measurement theory and methods for test construction and validation.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 605 and PSY 600K. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 610 Counseling and Clinical Pre-Practicum I Credits: 3 (3-0-0)
Course Description: Basic assessment and intervention skills; accurate observation, conceptualization, and response.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 611 Counseling and Clinical Pre-Practicum II Credits: 3 (3-0-0)
Course Description: Counseling and clinical techniques; assessment and intervention strategies; special applications.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 612 Introduction to Addiction Counseling Credits: 3 (3-0-0)
Course Description: Therapies used to treat individuals with substance use disorders, with an emphasis on empirically supported treatments.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 613 Advanced Addiction Counseling Credits: 3 (3-0-0)
Course Description: Advanced therapies used to treat individuals with substance use disorders, with an emphasis on empirically supported treatments.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 643 Industrial/Organizational Psychology I Credits: 3 (3-0-0)
Course Description: Integration of multiple perspectives for examining work organizations, roles, and relationships, and organizational entry and socialization.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 643 and PSY 647.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 644 Industrial/Organizational Psychology II Credits: 3 (3-0-0)
Course Description: Multiple perspectives for examining individual and organizational development, orientation to organizations, and science and practice in industrial/organizational psychology.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 645  Industrial/Organizational Psychology at Work I  Credits: 2 (2-0-0)
Course Description: Integrating theory, research, and practice in industrial/organizational settings. Assessment and development of applications of psychology in organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 646  Industrial/Organizational Psychology at Work II  Credits: 2 (2-0-0)
Course Description: Development and application of scientific, ethical, and professional standards and competencies in applying psychology in industrial/organizational settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 647  Applied Industrial Psychology  Credits: 3 (0-0-3)
Course Description: Applications of theory and methods for recruitment, selection, training, and performance management within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 647 and PSY 643. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 648  Applied Organizational Psychology  Credits: 3 (0-0-3)
Course Description: Study of work behavior, roles, and relationships within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 652  Methods of Research in Psychology I  Credits: 4 (3-2-0)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, introducing general linear model approach.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 652 and PSY 662.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 653  Methods of Research in Psychology II  Credits: 4 (3-2-0)
Course Description: Advanced research designs emphasizing general linear model approach.
Prerequisite: PSY 652.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 653 and PSY 663.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655A  Research Issues and Models in Psychology: Applied  Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655B  Research Issues and Models in Psychology: General Experimental  Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 660  Applied Cross-Cultural Industrial/Organizational Psychology  Credits: 3 (0-0-3)
Course Description: Cultural differences in the application of individual and organizational interventions to improve human and organizational effectiveness.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology, PSY 647 or PSY 648. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 661  Applied Organizational Development  Credits: 3 (0-0-3)
Course Description: Techniques and interventions for developing, improving and effecting change in organizations through diagnosis, planned change, and survey feedback.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology, PSY 648.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 662  Applied Psychological Research Methods I Credits: 4 (0-0-4)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, the general linear model approach with emphasis on application.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 662 and PSY 652. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 663  Applied Psychological Research Methods II Credits: 4 (0-0-4)
Course Description: Advanced research designs emphasizing general linear model approach with emphasis on application.
Prerequisite: PSY 662.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 663 and PSY 653. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 665  Applied Psychological Research Design Credits: 3 (0-0-3)
Course Description: Review of scientific method, generation of hypotheses, and design of laboratory and field research studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; any graduate applied statistics course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 666  Succession Planning and Leadership Development Credits: 3 (0-0-3)
Course Description: Examines modern theories of leadership, strategies for succession planning; training, coaching, mentoring, professional development for leadership.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 648. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 667  Competency Modeling and Criterion Development Credits: 3 (0-0-3)
Course Description: Conducting job analyses and competency modeling within organizations, application of the results of those processes to criterion development.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 647. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 668  Workforce Training and Development Credits: 3 (0-0-3)
Course Description: An overview of adult learning theory, emphasizing the role of I/O psychology in identifying, designing, transferring, and evaluating training.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 647. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 669  Capstone: Practicum and Skills Development Credits: 3 (0-0-3)
Course Description: Refine I/O consulting skills through applied research/consulting projects with actual organizations, working in virtual teams with faculty mentors.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied I/O Psychology; 32 hours of program requirements. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 670  Psychological Measurement-Personality Credits: 3 (3-0-0)
Course Description: Construction, administration, interpretation of objectional measures of personality including aptitudes, abilities, interests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 672  Psychological Assessment Credits: 3 (3-0-0)
Course Description: Use of test data to determine cognitive functioning and predict behavior; supervised test administration and interpretation.
Prerequisite: PSY 670.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 675  Ethics and Professional Psychology Practice Credits: 3 (3-0-0)
Course Description: Ethical practice of psychology, duty-to-warn statutes, Colorado law, problematic ethical situations.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Registration Information: Or admission to the Professional Science Masters in Addiction Counseling
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 674  Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training and discussion leadership in undergraduate courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
PSY 686A Practicum: Counseling and Diagnosis I  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686C Practicum: Industrial/Organizational I  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686D Practicum: School I  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686E Practicum: Applied Social I  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686F Practicum: Perceptual and Brain Sciences I  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686G Practicum: Cognitive I  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 692A Seminar: Applied Social Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692B Seminar: Cognitive Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692C Seminar: Counseling Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692D Seminar: Industrial/Organizational Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692E Seminar: Perceptual and Brain Sciences  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692F Seminar: Special Topics in Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699B Thesis: Cognitive Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699C Thesis: Counseling Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 699D Thesis: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699E Thesis: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 720 Psychopathology Credits: 3 (3-0-0)
Course Description: Adult and child behavior pathology; theory, research, and methods related to etiology, defining characteristics, and maintaining causes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 722 Empirically Validated Therapies Credits: 3 (3-0-0)
Course Description: Outline of major empirically validated approaches to assessment and treatment including cognitive-behavioral therapies, interpersonal therapy.
Prerequisite: PSY 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 724 Motivational Interviewing Credits: 3 (3-0-0)
Course Description: Motivational interviewing in the treatment of individuals with substance use disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 726 Neuropharmacology of Addiction Credits: 3 (3-0-0)
Course Description: Neurobiological basis of addiction and how addictive substances affect neurochemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 727 Theories of Vocational Development Credits: 3 (3-0-0)
Course Description: Nature and current status of vocational development theory with implications for career counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 729 Counseling and Psychotherapy II Credits: 3 (3-0-0)
Course Description: Theory and practice of group psychotherapy and counseling.
Prerequisite: PSY 722.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 754 Multivariate Analysis in Behavioral Sciences Credits: 3 (3-0-0)
Course Description: Multivariate analysis, including factor and component analysis, applied to psychological research.
Prerequisite: PSY 653.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 775 Diversity Issues in Counseling Credits: 3 (3-0-0)
Course Description: Diversity issues in clients and counselors such as gender, race, age, sexual orientation, education, religion, disability, socioeconomic status.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 776 Business and Practice of Addiction Counseling Credits: 3 (3-0-0)
Course Description: Business aspects and professional development issues associated with a career in addiction counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Philosophy, approaches, and techniques of college-level instruction; supervised teaching with consultation of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
PSY 786A Advanced Practicum: Counseling and Diagnosis II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786C Advanced Practicum: Industrial/Organizational II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786D Advanced Practicum: School II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686D.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786E Advanced Practicum: Clinical Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686E or PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786F Advanced Practicum: Supervision Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786G Advanced Practicum: Applied Social II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686E.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786H Advanced Practicum: Perceptual and Brain Sciences II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686F.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786I Advanced Practicum: Cognitive II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 686G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 786J Advanced Practicum: Vocational Assessment Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 610 and PSY 727.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 787 Internship Credits: Var[1-18] (0-0-0)
Course Description: Supervised work experience under departmental guidelines in approved psychological agency or setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 792A Advanced Seminar: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792B Advanced Seminar: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792C Advanced Seminar: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792D Advanced Seminar: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 792E  Advanced Seminar: Perceptual and Brain Sciences  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792F  Advanced Seminar: Special Topics in Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 793  Clinical Supervision of Addiction Counseling  Credits: 3 (3-0-0)
Course Description: Tools and models in the supervision and treatment of addictions.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 795A  Independent Study: Applied Social Psychology  Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795B  Independent Study: Cognitive Psychology  Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795C  Independent Study: Counseling/Clinical Psych  Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795D  Independent Study: Industrial/Organizational Psychology  Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795E  Independent Study: Perceptual/Brain Sciences  Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795F  Independent Study: Special Topics in Psychology  Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Primarily for doctoral candidates in psychology.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 799A  Dissertation: Applied Social Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799B  Dissertation: Cognitive Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799C  Dissertation: Counseling Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799D  Dissertation: Industrial/Organizational Psychology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 799E Dissertation: Perceptual and Brain Sciences Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Major in Psychology

Psychology is one of the most popular and versatile majors. The major emphasizes a strong background in the natural sciences (e.g., mathematics, chemistry, biology, statistics, human physiology), writing, and research.

Electives enable students to obtain a second major or minor in a field of interest or take pre-professional courses and graduate with:

1. A combination of courses and experiences to qualify for semiprofessional jobs in psychological settings or closely-related fields (e.g., addictions counseling);
2. A combination of courses providing a background for careers outside of psychology (e.g., human resources);
3. Pre-professional courses for potential admittance into professional training programs (e.g., medicine, occupational therapy, veterinary medicine); and/or
4. A complement of courses for potential admittance into psychology graduate school programs. Advanced degrees are often a prerequisite for professional careers in psychology.

Learning Outcomes

Students will:

• Demonstrate understanding of the basic theories, principles, and laws of behavior.
• Demonstrate knowledge of psychological principles and concepts across several content areas.
• Demonstrate knowledge and appreciation of the scientific methods used in psychological research by engaging in analytical and critical thinking.

Potential Occupations

A B.S. degree in Psychology prepares students for a variety of career opportunities. Because of the strong science orientation, students develop a number of important skills required in a broad range of occupations. Skills such as written and oral communication, cooperation, analytical and critical thinking, and a background in the sciences demonstrate versatility and an ability to pursue a variety of career paths. Participating in paid or volunteer work, internships, study abroad and experiential education opportunities are highly recommended to increase students’ employment opportunities.

Possible career opportunities include, but are not limited to: addictions counselor, human services worker, case worker, mental health services worker, probation officer, community relations officer, educator, program developer/administrator, human resources administrator, labor relations representative, compensation and benefits administrator, public relations specialist/special events administrator, advertising producer/writer, account services representative, media representative, market researcher, government program administrator, business manager, buying agent, sales representative, real estate broker, industrial/organizational consultant, psychometrician, neuropsychologist (with advanced degree), cognitive neuroscientist (with advanced degree), engineering psychologist (with advanced degree), clinical psychologist (with advanced degree), family therapist (with advanced degree), lawyer (with advanced degree), occupational therapist (with advanced degree), veterinarian (with advanced degree) or physician (with advanced degree).

Concentrations

• Addictions Counseling Concentration
• Clinical/Counseling Psychology Concentration
• General Psychology Concentration
• Industrial/Organizational Concentration
• Mind, Brain, and Behavior Concentration

Major in Psychology, Addictions Counseling Concentration

The Addictions Counseling Concentration provides students with an undergraduate degree in psychology, while completing the required courses for becoming a certified addictions counselors (Level 1) in the state of Colorado. Besides coursework, students are required to complete internship hours at an approved facility. Students who are interested in the clinical/counseling field of psychology, but do not wish to seek an advanced degree in psychology, may find this an attractive concentration.

Requirements

Effective Spring 2015

Students must have a C or better in each of the following: PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture-lab pairings in psychology.

Freshman

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<td>Introduction to Ethics</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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**Total Credits**: 30

**Sophomore**

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<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<td>Psychology of the Individual in Context</td>
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**Total Credits**: 28

**Junior**

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<td>Basic Counseling Skills</td>
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<td>PSY 311A</td>
<td>Basic Counseling Skills Laboratory: CACI</td>
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<td>PSY 360</td>
<td>Psychology of Drug Addiction Treatment</td>
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<td>PSY 362</td>
<td>Professional Issues in Addiction Treatment</td>
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<td>Infectious Diseases and Substance Use</td>
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<tr>
<td>PSY 454</td>
<td>Biological Psychology</td>
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<td>PSY 455</td>
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<td>STAT 311</td>
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**Total Credits**: 32

**Senior**

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<td>Chemistry of Addictions</td>
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Select two groups from the following:  

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<td>PSY 317</td>
<td>Social Psychology Laboratory</td>
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<td>Group B</td>
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<tr>
<td>PSY 370</td>
<td>Psychological Measurement and Testing</td>
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<td>PSY 371</td>
<td>Psychological Measurement and Testing Laboratory</td>
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<td>Group C</td>
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<tr>
<td>PSY 452</td>
<td>Cognitive Psychology</td>
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<td>PSY 453</td>
<td>Cognitive Psychology Laboratory</td>
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Group D:
PSY 458 Cognitive Neuroscience 4B
PSY 459 Cognitive Neuroscience Laboratory 4A
PSY 401 History and Systems of Psychology 4C 3
PSY 410 Psychobiology of Addictions 3
PSY 488 Field Placement 6
Electives 1-2
Total Credits 30

Program Total Credits: 120

1 Select from the list of courses in category 3C of the AUCC except HONR 492 or any PSY course.

**Major Completion Map**

**Distinctive Requirements for Degree Program:**
Students must have a C or better in each: PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture/lab pairings in psychology.

**Freshman**

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<tr>
<th>Semester 1</th>
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**Sophomore**

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Arts and Humanities 3B
PSY 210, PSY 252 must be completed by the end of Semester 4. 3

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<td>Infectious Diseases and Substance Use</td>
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</table>
Major in Psychology, General Psychology Concentration

Students who prefer a broad view of the field often choose the General Psychology Concentration. Students in this concentration can tailor the psychology lecture/lab pair and upper division psychology elective requirements to fit their interests. Students with an interest in the clinical field are encouraged to participate in internships while those with an interest in pursuing an advanced degree in graduate school are encouraged to seek research experience with a faculty member.

Requirements

Effective Fall 2015

View Major Completion Map (http://wsnet.colostate.edu/CWIS608/Home/MajorCompletionMap)

**Students must have a C or better in each of the following:** PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture-lab pairings in psychology.

### Freshman

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<td>LIFE 102</td>
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**Historical Perspectives**

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**Social and Behavioral Sciences**

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**Total Credits**

30

### Sophomore

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<td>PSY 210</td>
<td>Psychology of the Individual in Context</td>
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**Total Credits**

15

**Program Total Credits:**

120
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**Junior**

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<td>PSY 317</td>
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<td>PSY 340</td>
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<td>PSY 341</td>
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<td>PSY 370</td>
<td>Psychological Measurement and Testing</td>
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<td>PSY 371</td>
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**Senior**

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<td>PSY 370</td>
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Group D:
PSY 440 Industrial Psychology 4B
PSY 441 Industrial Psychology Laboratory 4A

Group E:
PSY 452 Cognitive Psychology 4B
PSY 453 Cognitive Psychology Laboratory 4A

Group F:
PSY 454 Biological Psychology 4B
PSY 455 Biological Psychology Laboratory 4A

Group G:
PSY 456 Sensation and Perception 4B
PSY 457 Sensation and Perception Laboratory 4A

Group H:
PSY 458 Cognitive Neuroscience 4B
PSY 459 Cognitive Neuroscience Laboratory 4A
PSY 401 History and Systems of Psychology 4C 3

Upper-Division Psychology 3
Electives 3 10-12

Total Credits 30

Program Total Credits: 120

1 Select any course in category 3C of the AUCC except HONR 492 or any PSY course.
2 Students should select a total of three lecture/lab pairs of courses over the junior and senior years. Two pairs are necessary to satisfy AUCC Cat 4A and 4B requirements.
3 Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:
Students must have a C or better in each: PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture-lab pairings in psychology.

Freshman

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Historical Perspectives 3D 3

Total Credits 15

Semester 2

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Select one course from the following:

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Social and Behavioral Sciences 3C 3
CO 150 must be completed by the end of Semester 2.

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### Sophomore

#### Semester 3

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Arts and Humanities: 3B

Electives: 4

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Arts and Humanities: 3B

Global and Cultural Awareness: 3E

Elective: 2

PSY 210, PSY 252 must be completed by the end of Semester 4.

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### Junior

#### Semester 5

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Electives: 6

Upper-Division PSY Course: 3

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#### Semester 6

Select one group from the following:

**Group A:**
- PSY 315 Social Psychology
- PSY 317 Social Psychology Laboratory

**Group B:**
- PSY 340 Organizational Psychology
- PSY 341 Organizational Psychology Laboratory

**Group C:**
- PSY 370 Psychological Measurement and Testing
- PSY 371 Psychological Measurement and Testing Laboratory

**Group D:**
- PSY 440 Industrial Psychology
- PSY 441 Industrial Psychology Laboratory

**Group E:**
- PSY 452 Cognitive Psychology
- PSY 453 Cognitive Psychology Laboratory

**Group F:**
- PSY 454 Biological Psychology
- PSY 455 Biological Psychology Laboratory

**Group G:**
- PSY 456 Sensation and Perception
- PSY 457 Sensation and Perception Laboratory

**Group H:**
- PSY 458 Cognitive Neuroscience
- PSY 459 Cognitive Neuroscience Laboratory

<table>
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<tr>
<th>Critical</th>
<th>Recommended</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>STAT 312</td>
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<table>
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</table>
Electives
LIFE 102, CHEM 107, CHEM 108 must be completed by the end of Semester 6.

<table>
<thead>
<tr>
<th>Electives</th>
<th>7-8</th>
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Seniors

<table>
<thead>
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<tbody>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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</table>

Select one group from the following: 4-5

- **Group A:**
  - PSY 315 Social Psychology 4B
  - PSY 317 Social Psychology Laboratory 4A

- **Group B:**
  - PSY 340 Organizational Psychology 4B
  - PSY 341 Organizational Psychology Laboratory 4A

- **Group C:**
  - PSY 370 Psychological Measurement and Testing 4B
  - PSY 371 Psychological Measurement and Testing Laboratory 4A

- **Group D:**
  - PSY 440 Industrial Psychology 4B
  - PSY 441 Industrial Psychology Laboratory 4A

- **Group E:**
  - PSY 452 Cognitive Psychology 4B
  - PSY 453 Cognitive Psychology Laboratory 4A

- **Group F:**
  - PSY 454 Biological Psychology 4B
  - PSY 455 Biological Psychology Laboratory 4A

- **Group G:**
  - PSY 456 Sensation and Perception 4B
  - PSY 457 Sensation and Perception Laboratory 4A

- **Group H:**
  - PSY 458 Cognitive Neuroscience 4B
  - PSY 459 Cognitive Neuroscience Laboratory 4A

Electives
Upper-Division PSY

<table>
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<th>Electives</th>
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<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
</table>

Select one group from the following: 4-5

- **Group A:**
  - PSY 315 Social Psychology X 4B
  - PSY 317 Social Psychology Laboratory X 4A

- **Group B:**
  - PSY 340 Organizational Psychology X 4B
  - PSY 341 Organizational Psychology Laboratory X 4A

- **Group C:**
  - PSY 370 Psychological Measurement and Testing X 4B
  - PSY 371 Psychological Measurement and Testing Laboratory X 4A

- **Group D:**
  - PSY 440 Industrial Psychology X 4B
  - PSY 441 Industrial Psychology Laboratory X 4A

- **Group E:**
  - PSY 452 Cognitive Psychology X 4B
  - PSY 453 Cognitive Psychology Laboratory X 4A
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

<table>
<thead>
<tr>
<th>Group F:</th>
<th>Group G:</th>
<th>Group H:</th>
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<tbody>
<tr>
<td>PSY 454 Biological Psychology</td>
<td>PSY 456 Sensation and Perception</td>
<td>PSY 458 Cognitive Neuroscience</td>
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<tr>
<td>PSY 455 Biological Psychology Laboratory</td>
<td>PSY 457 Sensation and Perception Laboratory</td>
<td>PSY 459 Cognitive Neuroscience Laboratory</td>
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<tr>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4B</td>
<td>4B</td>
<td>4B</td>
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</table>

Electives

X

Total Credits 15

Program Total Credits 120

Major in Psychology, Industrial/Organizational Concentration

The Industrial/Organizational Concentration prepares students to move into the workforce with a bachelor’s degree or to pursue graduate education in Industrial/Organizational Psychology. Students in this concentration take seminars that focus on psychology in the workplace including, but not limited to, topics in leadership, work-life balance, training, and work motivation. Students are strongly encouraged to participate in experiential education opportunities, such as internships, to enhance their marketability in the workforce and as research assistants to strengthen their graduate school applications.

Requirements

Effective Fall 2015

Students must have a C or better in each of the following: PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture-lab pairings in psychology.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
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<td>3</td>
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<tr>
<td>CS 110 Personal Computing</td>
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<tr>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
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<td>MATH 117 College Algebra in Context I (GT-MA1)</td>
<td>1B</td>
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<td>MATH 118 College Algebra in Context II (GT-MA1)</td>
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<td>MATH 124 Logarithmic and Exponential Functions (GT-MA1)</td>
<td>1B</td>
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</tr>
<tr>
<td>PHIL 100 Appreciation of Philosophy (GT-AH3)</td>
<td>3B</td>
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<tr>
<td>PHIL 110 Logic and Critical Thinking (GT-AH3)</td>
<td>3B</td>
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<td>PHIL 120 History and Philosophy of Scientific Thought (GT-AH3)</td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>PHIL 205 Introduction to Ethics</td>
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<td>PHIL 210 Introduction to Formal Logic</td>
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<tr>
<td>PSY 100 General Psychology (GT-SS3)</td>
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<tr>
<td>PSY 192 Psychology First-Year Seminar</td>
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<tr>
<td>PSY 252 Mind, Brain, and Behavior</td>
<td></td>
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<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
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Total Credits 30

Sophomore

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<tr>
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<tr>
<td>CHEM 107 Fundamentals of Chemistry (GT-SC2)</td>
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<tr>
<td>CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>3A</td>
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<tr>
<td>PSY 210 Psychology of the Individual in Context</td>
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</table>
### Major in Psychology, Industrial/Organizational Concentration

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSY 250</td>
<td>Research Methods in Psychology</td>
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<tr>
<td>PSY 292A</td>
<td>Seminar: Industrial/Organizational</td>
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<tr>
<td>STAT 311</td>
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### Arts and Humanities

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### Global and Cultural Awareness

<table>
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### Electives

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
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### Total Credits

|             |                                                 | 30      |

### Junior

<table>
<thead>
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<tbody>
<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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Select three credits from the following:

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<tr>
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<tbody>
<tr>
<td>PSY 310</td>
<td>Basic Counseling Skills</td>
<td>3</td>
</tr>
<tr>
<td>PSY 315</td>
<td>Social Psychology</td>
<td></td>
</tr>
<tr>
<td>PSY 325</td>
<td>Psychology of Personality</td>
<td></td>
</tr>
<tr>
<td>PSY 452</td>
<td>Cognitive Psychology</td>
<td></td>
</tr>
<tr>
<td>PSY 492D²</td>
<td>Seminar: Industrial/Organizational Psychology</td>
<td></td>
</tr>
<tr>
<td>PSY 495D³</td>
<td>Independent Study: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 496D³</td>
<td>Group Study: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 498D³</td>
<td>Research: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 499D³</td>
<td>Thesis: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 340</td>
<td>Organizational Psychology</td>
<td>4B</td>
</tr>
<tr>
<td>PSY 341</td>
<td>Organizational Psychology Laboratory</td>
<td>4A</td>
</tr>
<tr>
<td>PSY 440</td>
<td>Industrial Psychology</td>
<td>4B</td>
</tr>
<tr>
<td>PSY 441</td>
<td>Industrial Psychology Laboratory</td>
<td>4A</td>
</tr>
<tr>
<td>PSY 492D²</td>
<td>Seminar: Industrial/Organizational Psychology</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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<tr>
<td>STAT 312</td>
<td>Statistics for Behavioral Sciences II</td>
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### Electives

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<tr>
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### Total Credits

|             |                                                 | 30      |

### Senior

<table>
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<tr>
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<tbody>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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Select 3 credits from the following not taken in the junior year:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>PSY 310</td>
<td>Basic Counseling Skills</td>
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</tr>
<tr>
<td>PSY 315</td>
<td>Social Psychology</td>
<td></td>
</tr>
<tr>
<td>PSY 325</td>
<td>Psychology of Personality</td>
<td></td>
</tr>
<tr>
<td>PSY 452</td>
<td>Cognitive Psychology</td>
<td></td>
</tr>
<tr>
<td>PSY 492D²</td>
<td>Seminar: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 495D³</td>
<td>Independent Study: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 496D³</td>
<td>Group Study: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 498D³</td>
<td>Research: Industrial/Organizational Psychology</td>
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</tr>
<tr>
<td>PSY 499D³</td>
<td>Thesis: Industrial/Organizational Psychology</td>
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<tr>
<td>PSY 370</td>
<td>Psychological Measurement and Testing</td>
<td>4B</td>
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<tr>
<td>PSY 371</td>
<td>Psychological Measurement and Testing Laboratory</td>
<td>4A</td>
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<tr>
<td>PSY 401</td>
<td>History and Systems of Psychology</td>
<td>4C</td>
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<tr>
<td>PSY 492D²</td>
<td>Seminar: Industrial/Organizational Psychology</td>
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### Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

### Total Credits

|             |                                                 | 30      |

### Program Total Credits:

|             |                                                 | 120     |

---

1. Select any course in category 3C of the AUCC except HONR 492 or any PSY course.
Students must complete at least two 3-credit Industrial/Organizational Psychology seminars, PSY 492D. Content changes from semester to semester and the course may be taken for credit multiple times.

Maximum of 12 credits allowed for Psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 486, PSY 488, PSY 495D, PSY 496D, PSY 498D, PSY 499D.

Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

### Major Completion Map

**Distinctive Requirements for Degree Program:**
Students must have a C or better in each: PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture-lab pairings in psychology.

#### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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<tbody>
<tr>
<td>CO 150</td>
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<td>X 1A</td>
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<tr>
<td>CS 110</td>
<td></td>
<td>X 1</td>
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<td>4</td>
</tr>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
<td>X 1B</td>
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<tr>
<td>PSY 100</td>
<td>General Psychology (GT-SS3)</td>
<td>X 3C</td>
<td>3</td>
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<tr>
<td>PSY 192</td>
<td>Psychology First-Year Seminar</td>
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</table>

### Recommended

- Historical Perspectives 3D 3
- PSY 150 must be completed by the end of Semester 2.

#### Total Credits 15

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
<th>Recommended</th>
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<tbody>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>X 3A</td>
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<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
<td>X 1B</td>
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<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
<td>X 1B</td>
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<tr>
<td>Select one course from the following:</td>
<td>X</td>
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</tr>
<tr>
<td>PHIL 100</td>
<td>Appreciation of Philosophy (GT-AH3)</td>
<td>3B</td>
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<tr>
<td>PHIL 110</td>
<td>Logic and Critical Thinking (GT-AH3)</td>
<td>3B</td>
<td></td>
<td></td>
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<td>PHIL 120</td>
<td>History and Philosophy of Scientific Thought (GT-AH3)</td>
<td>3B</td>
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<tr>
<td>PHIL 205</td>
<td>Introduction to Ethics</td>
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<td>PHIL 210</td>
<td>Introduction to Formal Logic</td>
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<td></td>
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<td>PSY 252</td>
<td>Mind, Brain, and Behavior</td>
<td>X 3</td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>3C 3</td>
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#### Total Credits 15

<table>
<thead>
<tr>
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<th>Credits</th>
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<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
<td>X 3A</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
<td>X 3A</td>
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<td>PSY 210</td>
<td>Psychology of the Individual in Context</td>
<td>X 3</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B 3</td>
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### Electives 4

#### Total Credits 15

<table>
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<tbody>
<tr>
<td>PSY 250</td>
<td>Research Methods in Psychology</td>
<td>X 4</td>
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<tr>
<td>PSY 292A</td>
<td>Seminar: Industrial/Organizational</td>
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<tr>
<td>STAT 311</td>
<td>Statistics for Behavioral Sciences I</td>
<td>X 3</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B 3</td>
<td></td>
<td></td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>3E 3</td>
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<td>Elective</td>
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### Total Credits 15

PSY 210, PSY 252 must be completed by the end of Semester 4.
### Junior

<table>
<thead>
<tr>
<th>Semester 5</th>
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<tbody>
<tr>
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<td>X</td>
<td>2</td>
<td></td>
<td>3</td>
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<tr>
<td>PSY 340 Organizational Psychology</td>
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<td>4B</td>
<td></td>
<td>3</td>
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<td>PSY 341 Organizational Psychology Laboratory</td>
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</tr>
<tr>
<td>STAT 312 Statistics for Behavioral Sciences II</td>
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<td>3</td>
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<tr>
<td>Electives</td>
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<td></td>
<td></td>
<td>5</td>
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<tr>
<td>PSY 292A must be completed by the end of Semester 5.</td>
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<tr>
<td>Total Credits</td>
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</tbody>
</table>

**Semester 6**

Select one course from the following:

- PSY 310 Basic Counseling Skills
- PSY 315 Social Psychology
- PSY 325 Psychology of Personality
- PSY 452 Cognitive Psychology
- PSY 492D Seminar: Industrial/Organizational Psychology
- PSY 495D Independent Study: Industrial/Organizational Psychology
- PSY 496D Group Study: Industrial/Organizational Psychology
- PSY 498D Research: Industrial/Organizational Psychology
- PSY 499D Thesis: Industrial/Organizational Psychology
- PSY 440 Industrial Psychology
- PSY 441 Industrial Psychology Laboratory
- PSY 492D Seminar: Industrial/Organizational Psychology
- SPCM 200 Public Speaking
- Elective

CHEM 107, CHEM 108, LIFE 102 must be completed by the end of Semester 6.

<table>
<thead>
<tr>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tr>
<td>PSY 440 Industrial Psychology</td>
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<td>PSY 441 Industrial Psychology Laboratory</td>
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<tr>
<td>PSY 492D Seminar: Industrial/Organizational Psychology</td>
<td>X</td>
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<td>SPCM 200 Public Speaking</td>
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### Senior

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<tr>
<td>BMS 300 Principles of Human Physiology</td>
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<td>PSY 370 Psychological Measurement and Testing</td>
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<td>PSY 371 Psychological Measurement and Testing Laboratory</td>
<td>X</td>
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<tr>
<td>PSY 492D Seminar: Industrial/Organizational Psychology</td>
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<td>PSY 340, PSY 341 must be completed by the end of Semester 7.</td>
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<tr>
<td>Total Credits</td>
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</table>

**Semester 8**

Select one course from the following:

- PSY 310 Basic Counseling Skills
- PSY 315 Social Psychology
- PSY 325 Psychology of Personality
- PSY 452 Cognitive Psychology
- PSY 492D Seminar: Industrial/Organizational Psychology
- PSY 495D Independent Study: Industrial/Organizational Psychology
- PSY 496D Group Study: Industrial/Organizational Psychology
- PSY 498D Research: Industrial/Organizational Psychology
- PSY 499D Thesis: Industrial/Organizational Psychology
- PSY 401 History and Systems of Psychology
- Elective

<table>
<thead>
<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSY 401 History and Systems of Psychology</td>
<td>X</td>
<td>4C</td>
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<td>Elective</td>
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</table>
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

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<tbody>
<tr>
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**Major in Psychology, Mind, Brain, and Behavior Concentration**

The Mind, Brain, and Behavior Concentration prepares students to be more competitive candidates for graduate programs in cognitive psychology, cognitive neuroscience, behavioral neuroscience, and sensation and perception. Many students considering a career in medicine and veterinarian medicine also chose to complete this concentration. Students acquire a stronger science and quantitative background compared to the other concentrations in psychology. Students are encouraged to participate as undergraduate research assistants and work with a faculty member on a research project.

**Requirements**

**Effective Fall 2015**

Students must have a C or better in each of the following: PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture-lab pairings in psychology.

**Freshman**

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<thead>
<tr>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
</tr>
<tr>
<td>CS 110</td>
<td>Personal Computing</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
</tr>
<tr>
<td>MATH 117</td>
<td>College Algebra in Context I (GT-MA1)</td>
</tr>
<tr>
<td>MATH 118</td>
<td>College Algebra in Context II (GT-MA1)</td>
</tr>
<tr>
<td>MATH 124</td>
<td>Logarithmic and Exponential Functions (GT-MA1)</td>
</tr>
</tbody>
</table>

Select one course from the following:

- PHIL 100 | Appreciation of Philosophy (GT-AH3) | 3B |
- PHIL 110 | Logic and Critical Thinking (GT-AH3) | 3B |
- PHIL 120 | History and Philosophy of Scientific Thought (GT-AH3) | 3B |
- PHIL 205 | Introduction to Ethics | |
- PHIL 210 | Introduction to Formal Logic | |
- PSY 100 | General Psychology (GT-SS3) | 3C | 3 |
- PSY 192 | Psychology First-Year Seminar | | 1 |
- PSY 252 | Mind, Brain, and Behavior | | 3 |
- Historical Perspectives | 3D | 3 |
- Social and Behavioral Sciences¹ | 3C | 3 |

**Total Credits** | 30 |

**Sophomore**

<table>
<thead>
<tr>
<th>AUCC</th>
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<tbody>
<tr>
<td>CHEM 107</td>
<td>Fundamentals of Chemistry (GT-SC2)</td>
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<td>CHEM 108</td>
<td>Fundamentals of Chemistry Laboratory (GT-SC1)</td>
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<tr>
<td>MATH 125</td>
<td>Numerical Trigonometry (GT-MA1)</td>
</tr>
<tr>
<td>MATH 126</td>
<td>Analytic Trigonometry (GT-MA1)</td>
</tr>
<tr>
<td>PSY 210</td>
<td>Psychology of the Individual in Context</td>
</tr>
<tr>
<td>PSY 250</td>
<td>Research Methods in Psychology</td>
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<tr>
<td>PSY 292B</td>
<td>Seminar: Mind, Brain Behavior</td>
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<tr>
<td>SPCM 200</td>
<td>Public Speaking</td>
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<td>Arts and Humanities</td>
<td>3B</td>
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<tr>
<td>Global and Cultural Awareness</td>
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**Total Credits** | 30 |
## Junior

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<th>Course</th>
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<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<tr>
<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<tr>
<td>PSY 352</td>
<td>Learning and Memory</td>
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Select one pair of courses from the following:

<table>
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<tr>
<th>Group A</th>
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<tbody>
<tr>
<td>PSY 452</td>
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<td>PSY 453</td>
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<table>
<thead>
<tr>
<th>Group B</th>
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<tbody>
<tr>
<td>PSY 454</td>
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<tr>
<td>PSY 455</td>
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<table>
<thead>
<tr>
<th>Group C</th>
</tr>
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<tbody>
<tr>
<td>PSY 456</td>
</tr>
<tr>
<td>PSY 457</td>
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<table>
<thead>
<tr>
<th>Group D</th>
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</thead>
<tbody>
<tr>
<td>PSY 458</td>
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<tr>
<td>PSY 459</td>
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| STAT 311 | Statistics for Behavioral Sciences I       | 3       |
| STAT 312 | Statistics for Behavioral Sciences II      | 3       |

### Upper Division Psychology

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<tr>
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### Electives

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Total Credits: 30

## Senior

Select one course from the following:

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<th>Title</th>
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<tbody>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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<tr>
<td>BMS 325</td>
<td>Cellular Neurobiology</td>
<td>4</td>
</tr>
<tr>
<td>BMS 330</td>
<td>Microscopic Anatomy</td>
<td>4</td>
</tr>
<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
<td>4</td>
</tr>
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<td>BMS 430</td>
<td>Endocrinology</td>
<td>4</td>
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<tr>
<td>BMS 450</td>
<td>Pharmacology</td>
<td>4</td>
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<tr>
<td>PSY 401</td>
<td>History and Systems of Psychology</td>
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Select two pairs of courses not taken in junior year from the following:

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<td>PSY 453</td>
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<table>
<thead>
<tr>
<th>Group B</th>
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<tbody>
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<td>PSY 454</td>
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<td>PSY 455</td>
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<table>
<thead>
<tr>
<th>Group C</th>
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<tbody>
<tr>
<td>PSY 456</td>
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<td>PSY 457</td>
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<table>
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<tr>
<th>Group D</th>
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<td>PSY 459</td>
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<tr>
<th>Quantitative Elective</th>
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<tr>
<td>Electives</td>
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Total Credits: 30

Program Total Credits: 120

---

1. Select any course in category 3C of the AUCC except HONR 492 or any PSY course.
Students should select a total of three lecture/lab pairs of courses over the junior and senior years. Two pairs are necessary to satisfy AUCC Cat 4A and 4B requirements.

Take one additional mathematics or statistics course excluding MATH 101, MATH 105, MATH 192, STAT 192, STAT 201, and STAT 204. The honors course PSY 350 will count for this elective.

Select enough elective credits to bring the program to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

## Major Completion Map

### Distinctive Requirements for Degree Program:
Students must have a C or better in each: PSY 100; PSY 210; PSY 250; PSY 252; PSY 401; and the three lecture-lab pairings in psychology.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
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<tr>
<td>CS 110</td>
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<td>MATH 117</td>
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<td>PSY 100</td>
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<td>3C</td>
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<td>Historical Perspectives</td>
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Total Credits: 15

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<td>MATH 118</td>
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<td>PHIL 110</td>
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<td>PHIL 205</td>
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Total Credits: 15

### Sophomore

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<td>MATH 126</td>
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<td>PSY 210</td>
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Total Credits: 15

<table>
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<td>PSY 292B</td>
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<td>SPCM 200</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3E</td>
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Total Credits: 15
PSY 210, PSY 252 must be completed by the end of Semester 4.

### Total Credits
15

**Junior**

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<tbody>
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<tr>
<td>PSY 352</td>
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<tr>
<td>STAT 311</td>
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<td>Elective</td>
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<tr>
<td>Upper-Division PSY course</td>
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<td>CHEM 107, CHEM 108, LIFE 102 must be completed by the end of Semester 5</td>
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### Total Credits
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### Semester 6

<table>
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<tr>
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<tr>
<td>PSY 452</td>
<td>Cognitive Psychology</td>
<td>4B</td>
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</tr>
<tr>
<td>PSY 453</td>
<td>Cognitive Psychology Laboratory</td>
<td>4A</td>
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<td>Group B:</td>
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<td></td>
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</tr>
<tr>
<td>PSY 454</td>
<td>Biological Psychology</td>
<td>4B</td>
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<tr>
<td>PSY 455</td>
<td>Biological Psychology Laboratory</td>
<td>4A</td>
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<td>Group C:</td>
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<tr>
<td>PSY 456</td>
<td>Sensation and Perception</td>
<td>4B</td>
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</tr>
<tr>
<td>PSY 457</td>
<td>Sensation and Perception Laboratory</td>
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<td>Group D:</td>
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<tr>
<td>PSY 458</td>
<td>Cognitive Neuroscience</td>
<td>4B</td>
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<td>PSY 459</td>
<td>Cognitive Neuroscience Laboratory</td>
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<td>STAT 312</td>
<td>Statistics for Behavioral Sciences II</td>
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### Total Credits
15

**Senior**

<table>
<thead>
<tr>
<th>Critical</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>Select one course from the following:</td>
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<td>3-5</td>
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<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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<td>BMS 325</td>
<td>Cellular Neurobiology</td>
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<td>BMS 330</td>
<td>Microscopic Anatomy</td>
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<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<td>BMS 430</td>
<td>Endocrinology</td>
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<tr>
<td>BMS 450</td>
<td>Pharmacology</td>
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<tr>
<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
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<tr>
<td>PSY 452</td>
<td>Cognitive Psychology</td>
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<tr>
<td>PSY 453</td>
<td>Cognitive Psychology Laboratory</td>
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</tr>
<tr>
<td>Group B:</td>
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<td></td>
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</tr>
<tr>
<td>PSY 454</td>
<td>Biological Psychology</td>
<td>4B</td>
<td></td>
</tr>
<tr>
<td>PSY 455</td>
<td>Biological Psychology Laboratory</td>
<td>4A</td>
<td></td>
</tr>
<tr>
<td>Group C:</td>
<td></td>
<td></td>
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<tr>
<td>PSY 456</td>
<td>Sensation and Perception</td>
<td>4B</td>
<td></td>
</tr>
<tr>
<td>PSY 457</td>
<td>Sensation and Perception Laboratory</td>
<td>4A</td>
<td></td>
</tr>
<tr>
<td>Group D:</td>
<td></td>
<td></td>
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<tr>
<td>PSY 458</td>
<td>Cognitive Neuroscience</td>
<td>4B</td>
<td></td>
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<tr>
<td>PSY 459</td>
<td>Cognitive Neuroscience Laboratory</td>
<td>4A</td>
<td></td>
</tr>
</tbody>
</table>
Electives

PSY 352 must be completed by the end of Semester 7.

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 401</td>
<td>X</td>
<td></td>
<td>4C</td>
<td>3</td>
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</tbody>
</table>

Select one group from the following:

Group A:
- PSY 452 Cognitive Psychology
- PSY 453 Cognitive Psychology Laboratory

Group B:
- PSY 454 Biological Psychology
- PSY 455 Biological Psychology Laboratory

Group C:
- PSY 456 Sensation and Perception
- PSY 457 Sensation and Perception Laboratory

Group D:
- PSY 458 Cognitive Neuroscience
- PSY 459 Cognitive Neuroscience Laboratory

Electives

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3-4</td>
<td></td>
</tr>
</tbody>
</table>

Quantitative Elective

The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Total Credits

Program Total Credits:

A minimum of 38 credits are required to complete this program.

Master of Applied Industrial/ Organizational Psychology, Plan C (M.A.I.O.P)

Effective Spring 2009

First Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 605</td>
<td>Applied Measurement Theory</td>
<td>3</td>
</tr>
<tr>
<td>PSY 647</td>
<td>Applied Industrial Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 648</td>
<td>Applied Organizational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 662</td>
<td>Applied Psychological Research Methods I</td>
<td>4</td>
</tr>
<tr>
<td>PSY 663</td>
<td>Applied Psychological Research Methods II</td>
<td>4</td>
</tr>
<tr>
<td>PSY 666</td>
<td>Succession Planning and Leadership Development</td>
<td>3</td>
</tr>
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<td></td>
<td>Total Credits</td>
<td>20</td>
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</table>

Second Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 660</td>
<td>Applied Cross-Cultural Industrial/ Organizational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 661</td>
<td>Applied Organizational Development</td>
<td>3</td>
</tr>
</tbody>
</table>

Program Total Credits:

Department of Statistics

Office in Statistics Building, Room 102
(970) 491-5269 or (970) 491-6546
stat.colostate.edu (http://www.stat.colostate.edu)

Professor Jean D. Opsomer, Chair
Professor Mary Meyer, Associate Chair for Undergraduate Education
Professor Xiaowen Hu, Undergraduate Advisor

Undergraduate
Majors
• Major in Statistics

Minors
• Minor in Applied Statistics
• Minor in Statistics

Graduate
Graduate Programs in Statistics
The department offers graduate programs leading to Master of Applied Statistics, Master of Science and Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Statistics (http://www.stat.colostate.edu).

Certificates
• Data Analysis
• Theory and Applications of Regression Models

Master Programs
• Master of Applied Statistics, Plan C (M.A.S.)
• Master of Science in Statistics, Plan A*
• Master of Science in Statistics, Plan B*

Ph.D.
• Ph.D. in Statistics*

* Please see department for program of study.

Courses
Subjects in this department include: Applied Statistics (STAA) and Statistics (STAT).

Applied Statistics (STAA)
STAA 551 Regression Models and Applications Credits: 2 (2-0-0)
Course Description: Estimation/hypothesis testing methods: t-tests, ANOVA, regression, residual analyses, transformations, goodness of fit, interactions, confounding.
Prerequisite: None.
Registration Information: Admission to the M.A.S. program. Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 552 Generalized Regression Models Credits: 2 (2-0-0)
Course Description: Nonlinear regression, iteratively reweighted least squares, dose-response models, count data, multi-way tables, survival analysis.
Prerequisite: STAA 551, may be taken concurrently or STAT 540.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 553 Experimental Design Credits: 2 (2-0-0)
Course Description: Design/analysis of experiments. Emphasis on balanced design; use of computing packages SAS and R. Example-based presentation, rather than theoretical.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 554 Mixed Models Credits: 2 (2-0-0)
Course Description: Topics in linear, generalized linear, and nonlinear models with fixed and random predictors, balanced and unbalanced cases.
Prerequisite: STAA 553, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 556 Statistical Consulting Credits: 3 (3-0-0)
Course Description: Effective consulting to meet with clients, analyze real data, and prepare reports.
Prerequisite: STAA 500 to 599 - at least 28 credits.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 561 Probability with Applications Credits: 2 (2-0-0)
Course Description: Random variables, continuous and discrete distributions, expectations, joint and conditional distributions, transformations.
Prerequisite: None.
Registration Information: Admission to the M.A.S. program. Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 562 Mathematical Statistics with Applications Credits: 2 (2-0-0)
Course Description: Theory and applications of estimations, testing, and confidence intervals. Computer simulations, sampling from the normal distribution.
Prerequisite: STAA 561, may be taken concurrently or STAT 520.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
STAA 565 Quantitative Reasoning  Credit: 1 (1-0-0)
Course Description: Confounding, types of bias such as selection bias and regression effect bias, Simpson’s paradox, experiments versus observational studies.
Prerequisite: STAA 551, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 566 Computational and Graphical Methods  Credit: 1 (1-0-0)
Course Description: Exploratory data analysis using graphics, effective communication with graphs, data reduction methods.
Prerequisite: None.
Registration Information: Admission to M.A.S. program. Written consent of instructor. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 567 Computational and Simulation Methods  Credit: 1 (1-0-0)
Course Description: Methods to estimate probability distribution of nonstandard test statistics, find estimators, test hypotheses, and compute confidence intervals.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540) and (STAA 561, may be taken concurrently or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 568 Topics Industrial/Organizational Statistics  Credit: 1 (1-0-0)
Course Description: Quality management, process control, reliability, decision making.
Prerequisite: (STAA 553, may be taken concurrently) and (STAA 561 or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 571 Survey Statistics  Credits: 2 (2-0-0)
Course Description: Survey design, simple random, stratified, and cluster samples. Estimation and variance estimation.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 572 Nonparametric Methods  Credits: 2 (2-0-0)
Course Description: Rank-based methods, nonparametric inferential techniques, scatterplot smoothing, nonparametric function estimation, environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540) and (STAA 562, may be taken concurrently or STAT 530).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 573 Analysis of Time Series  Credits: 2 (2-0-0)
Course Description: Moving average and auto-regression correlation structures, estimation and forecasting, modeling seasonality. Financial and environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540) and (STAA 561, may be taken concurrently or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 574 Methods in Multivariate Analysis  Credits: 2 (2-0-0)
Course Description: Multivariate ANOVA, principal components, factor analysis, cluster analysis, discrimination analysis.
Prerequisite: None.
Registration Information: Must have concurrent registration in STAA 551; must have concurrent registration in STAA 561. Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 575 Applied Bayesian Statistics  Credits: 2 (2-0-0)
Course Description: Bayesian analysis of statistical models, prior and posterior distributions, computing methods, interpretation.
Prerequisite: (STAA 552) and (STAA 562 or STAT 530) and (STAA 567).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 576 Methods in Environmental Statistics  Credits: 2 (2-0-0)
Course Description: Statistical methodologies used in environmental/ecological studies. Topics in spatial statistics, abundance estimation for biological populations.
Prerequisite: (STAA 552) and (STAA 561 or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 577 Statistical Learning and Data Mining  Credits: 2 (2-0-0)
Course Description: Applications-oriented overview into how to use statistical methods to do data mining, inference, and prediction.
Prerequisite: None.
Registration Information: Must have concurrent registration in STAA 551; must have concurrent registration in STAA 561. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Statistics (STAT)

STAT 158 Introduction to R Programming  Credit: 1 (1-0-0)
Course Description: Programming using the R Project for the Statistical Computing. Data objects, for loops, if statements, using packages.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
STAT 192 First-Year Seminar in Statistics  Credit: 1 (0-0-1)
Course Description: Explore careers in statistics and the variety of problems encountered by statisticians.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 201 General Statistics  Credits: 3 (2-0-1)
Course Description: Graphs, descriptive statistics, confidence intervals, hypothesis tests, correlation and simple regression, tests of association.
Prerequisite: MATH 1**** to 200 - at least 1 credit or MATH 1** to 200 - at least 1 credit or M 1** to 200 - at least 1 credit or M 1**** to 200 - at least 1 credit or M CC 1** to 200 - at least 1 credit or M CC 1**** to 200 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework. Intended as a one-semester terminal course. Must register for lecture and recitation. Credit not allowed for both STAT 201 and STAT 204.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 204 Statistics for Business Students  Credits: 3 (2-2-0)
Course Description: Surveys, sampling, descriptive statistics, confidence intervals, contingency tables, control charts, regression, exponential smoothing, forecasting.
Prerequisite: MATH 1**** to 200 - at least 1 credit or MATH 1** to 200 - at least 1 credit or M 1** to 200 - at least 1 credit or M 1**** to 200 - at least 1 credit or M CC 1** to 200 - at least 1 credit or M CC 1**** to 200 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework. Must register for lecture and laboratory. Credit not allowed for both STAT 204 and STAT 201.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 301 Introduction to Statistical Methods  Credits: 3 (3-0-0)
Course Description: Techniques in statistical inference; confidence intervals, hypothesis tests, correlation and regression, analysis of variance, chi-square tests.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one course: STAT 301, STAT 307/ERHS 307, STAT 311, STAT 315.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Tradition within Student Option.
Special Course Fee: No.

STAT 303 Introduction to Communications Principles  Credits: 3 (3-0-0)
Also Offered As: ECE 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently or MATH 345, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 305 Sampling Techniques  Credits: 3 (3-0-0)
Course Description: Sample designs: simple random, stratified, systematic, cluster, unequal probability, two-phase; methods of estimation and sample size determination.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 307 Introduction to Biostatistics  Credits: 3 (3-0-0)
Course Description: Biostatistical methods; confidence intervals, hypothesis tests, simple correlation and regression, one-way analysis of variance.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one of the following: STAT 301, STAT 307/ERHS 307, STAT 311, or STAT 315.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 311 Statistics for Behavioral Sciences I  Credits: 3 (3-0-0)
Course Description: Statistical literacy, quantitative reasoning, statistical methods in SPSS including ANOVA, regression, logistic regression, and categorical data.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one of the following: ERHS 307, STAT 301, STAT 307, or STAT 311.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 312 Statistics for Behavioral Sciences II  Credits: 3 (3-0-0)
Course Description: One-way analysis of variance, factorial designs, blocked designs, multiple comparisons of means, and multiple regression.
Prerequisite: STAT 311.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 315 Statistics for Engineers and Scientists  Credits: 3 (3-0-0)
Course Description: Calculus-based probability and statistics: distribution theory, estimation, hypothesis testing, applications to engineering and the sciences.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Credit allowed for only one course: ERHS 307, STAT 301, STAT 307, STAT 315.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 316 Games and Gambling  Credit: 1 (1-0-0)
Course Description: Application of probability concepts to games of chance and gambling contests.
Prerequisite: STAT 315.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 321</td>
<td>Elementary Probabilistic-Stochastic Modeling</td>
<td>3</td>
<td>Probabilistic and stochastic models of real phenomena; distributions, expectations, correlations, averages; simple Markov chains and random walks.</td>
<td>(CS 156 or CS 160 or MATH 151 or MATH 152) and (MATH 155 or MATH 160).</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Statistical Computing in SAS</td>
<td>2</td>
<td>Statistical procedures and database operations using the SAS programming language.</td>
<td>(STAT 315 or STAT 430) and (STAT 342).</td>
<td>Spring</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
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<tr>
<td>STAT 342</td>
<td>Statistical Data Analysis II</td>
<td>3</td>
<td>Single-factor analysis of variance models; multifactor analysis of variance models; randomized block design; Latin squares; split-plot design.</td>
<td>(STAT 315 or STAT 430) and (STAT 342).</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>STAT 350</td>
<td>Design of Experiments</td>
<td>3</td>
<td>Analysis of variance, covariance; randomization; completely randomized, randomized block, Latin-square, split-plot, factorial and other designs.</td>
<td>(MATH 229 or MATH 369) and (STAT 420).</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
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<tr>
<td>STAT 358</td>
<td>Introduction to Statistical Computing in SAS</td>
<td>2</td>
<td>Statistical procedures and database operations using the SAS programming language.</td>
<td>(STAT 315 or STAT 430) and (STAT 342).</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>STAT 372</td>
<td>Data Analysis Tools</td>
<td>3</td>
<td>Data analysis principles and practice, statistical packages and computing; ANOVA, regression and categorical data methods.</td>
<td>(STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315).</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>STAT 400</td>
<td>Statistical Computing</td>
<td>3</td>
<td>Computationally intensive statistical methods; optimization for statistical problems; simulation &amp; Monte Carlo methods; resampling methods; smoothing.</td>
<td>(CS 160 or CS 163 or CS 164 or MATH 151 and MATH 153) and (STAT 420, may be taken concurrently).</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
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<tr>
<td>STAT 420</td>
<td>Probability and Mathematical Statistics I</td>
<td>3</td>
<td>Probability, random variables, distribution functions, and expectations; joint and conditional distributions and expectations; transformations.</td>
<td>MATH 255 or MATH 261.</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
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<tr>
<td>STAT 421</td>
<td>Introduction to Stochastic Processes</td>
<td>3</td>
<td>Modeling phenomena with stochastic processes and the simulation and analysis of stochastic process models.</td>
<td>(STAT 315 or STAT 430) and (STAT 420).</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>STAT 420</td>
<td>Probability and Mathematical Statistics II</td>
<td>3</td>
<td>Theories and applications of estimation, testing, and confidence intervals, sampling distributions including normal, gamma, beta X-squared, t, and F.</td>
<td>(STAT 420).</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
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<tr>
<td>STAT 440</td>
<td>Bayesian Data Analysis</td>
<td>3</td>
<td>Applied Bayesian data analysis, Bayesian inference and interpretation of results, computing methods including MCMC, model selection and evaluation.</td>
<td>(STAT 315 or STAT 430) and (STAT 342).</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>STAT 460</td>
<td>Applied Multivariate Analysis</td>
<td>3</td>
<td>Principles for multivariate estimation and testing; multivariate analysis of variance, discriminant analysis; principal components, factor analysis.</td>
<td>(STAT 340 or STAT 341).</td>
<td>Fall, Spring, Summer.</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
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</tbody>
</table>
STAT 472 Statistical Consulting Credits: 3 (0-0-3)
Course Description: Statistical consulting skills including data analysis, problem solving, report writing, oral communication, and planning experiments.
Prerequisite: STAT 342 or STAT 372.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 500 Statistical Computer Packages Credit: 1 (0-2-0)
Course Description: Comparison, evaluation, and use of computer packages for univariate and multivariate statistical analyses.
Prerequisite: STAT 340 and STAT 350.
Registration Information: Admission to the Master of Applied Statistics program can substitute for STAT 350. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 501 Statistical Science Credit: 1 (1-0-0)
Course Description: Overview of statistics theory; use in agriculture, business, environment, engineering; modeling; computing; statisticians as researchers/consultants.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 511 Design and Data Analysis for Researchers I Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters and researchers emphasizing design and analysis of experiments.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 511A Design and Data Analysis for Researchers I: R Software Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using R software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 511B Design and Data Analysis for Researchers I: SAS Software Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using SAS software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 512 Design and Data Analysis for Researchers II Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters and researchers emphasizing design and analysis of experiments.
Prerequisite: STAT 511A or STAT 511B.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 514 Agricultural Experimental Design and Analysis Credits: 4 (3-3-0)
Also Offered As: SOCR 514.
Course Description: Design and implementation of agricultural experiments and statistical analysis of resulting data.
Prerequisite: STAT 301 or STAT 307 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: STAT 302, STAT 514, SOCR 414, or SOCR 514.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 515 Statistical Science and Process Improvement Credits: 3 (2-2-0)
Course Description: Statistical methods in process design; statistical methods; measurement processes; customer evaluation.
Prerequisite: QNT 570 or STAT 511 or STAT 540.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 520 Introduction to Probability Theory Credits: 4 (4-0-0)
Course Description: Probability, random variables, distributions, expectations, generating functions, limit theorems, convergence, random processes.
Prerequisite: MATH 369 and MATH 261 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 521 Stochastic Processes I Credits: 3 (3-0-0)
Course Description: Characterization of stochastic processes. Markov chains in discrete and continuous time, branching processes, renewal theory, Brownian motion.
Prerequisite: STAT 520.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
STAT 522 Stochastic Processes II Credits: 3 (3-0-0)
Course Description: Martingales and applications, random walks, fluctuation theory, diffusion processes, point processes, queueing theory.
Prerequisite: STAT 521.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 523 Quantitative Spatial Analysis Credits: 3 (3-0-0)
Also Offered As: NR 523.
Course Description: Techniques in spatial analysis; point pattern analysis, spatial autocorrelation, trend surface and spectral analysis.
Prerequisite: ERHS 307 or STAT 501 or STAT 307.
Registration Information: Credit not allowed for both STAT 523 and NR 523.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 524 Financial Statistics Credits: 3 (3-0-0)
Also Offered As: FIN 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: Admission to MSBA program with Financial Risk Management specialization can substitute for MATH 345. Credit not allowed for both STAT 524 and FIN 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 525 Analysis of Time Series I Credits: 3 (3-0-0)
Course Description: Trend and seasonality, stationary processes, Hilbert space techniques, spectral distribution function, fitting ARIMA models, linear prediction.
Prerequisite: STAT 430.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 526 Analysis of Time Series II Credits: 3 (3-0-0)
Course Description: Spectral analysis; the periodogram; spectral estimation techniques; multivariate time series; linear systems, optimal control; Kalman filtering, prediction.
Prerequisite: STAT 525.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 530 Mathematical Statistics Credits: 3 (3-0-0)
Course Description: Sampling distributions, estimates, testing, confidence intervals, exact and asymptotic theories of maximum likelihood and distribution-free methods.
Prerequisite: STAT 520.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 531 Nonparametric Statistics Credits: 3 (3-0-0)
Course Description: Distribution and uses of order statistics; nonparametric inferential techniques, their uses and mathematical properties.
Prerequisite: STAT 430.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 532 Stochastic Processes III Credits: 3 (3-0-0)
Course Description: Martingales and applications, random walks, fluctuation theory, diffusion processes, point processes, queueing theory.
Prerequisite: STAT 521.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 533 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 501 or STAT 507 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 534 Stochastic Processes IV Credits: 3 (3-0-0)
Course Description: Martingales and applications, random walks, fluctuation theory, diffusion processes, point processes, queueing theory.
Prerequisite: STAT 521.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 540 Data Analysis and Regression Credits: 3 (3-0-0)
Course Description: Introduction to multiple regression and data analysis with emphasis on graphics and computing.
Prerequisite: STAT 300 to 481 - at least 6 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 542 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 501 or STAT 507 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 543 Stochastic Processes V Credits: 3 (3-0-0)
Course Description: Martingales and applications, random walks, fluctuation theory, diffusion processes, point processes, queueing theory.
Prerequisite: STAT 521.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 544 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 501 or STAT 507 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 545 Stochastic Processes VI Credits: 3 (3-0-0)
Course Description: Martingales and applications, random walks, fluctuation theory, diffusion processes, point processes, queueing theory.
Prerequisite: STAT 521.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 546 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 501 or STAT 507 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 547 Statistics for Environmental Monitoring Credits: 3 (3-0-0)
Also Offered As: CIVE 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both STAT 547 and CIVE 547. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 548 Bioinformatics Algorithms Credits: 4 (3-2-0)
Also Offered As: CS 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Student should have preexisting knowledge of a contemporary programming language. Credit not allowed for both STAT 548 and CS 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 550 Applied Multivariate Analysis Credits: 3 (3-0-0)
Course Description: Multivariate analysis of variance; principal components; factor analysis; discriminant analysis; cluster analysis.
Prerequisite: STAT 520 and STAT 540.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 551 Nonparametric Statistics Credits: 3 (3-0-0)
Course Description: Distribution and uses of order statistics; nonparametric inferential techniques, their uses and mathematical properties.
Prerequisite: STAT 430.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 552 Practicum in Consulting Techniques Credit: 1 (0-0-1)
Course Description: Instruction on planning studies, writing reports, and interacting with clients. Attend and critique consulting sessions.
Prerequisite: STAT 541.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 553 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 501 or STAT 507 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
STAT 592 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 592 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 600 Statistical Computing Credits: 3 (3-0-0)
Course Description: Optimization and integration in statistics; Monte Carlo methods; simulation; bootstrapping; density estimation; smoothing.
Prerequisite: STAT 520 and STAT 540.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 604 Managerial Statistics Credits: 2 (2-0-0)
Also Offered As: BUS 604.
Course Description: Introduction to statistical thinking and methods used to support managerial decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the MBA program. Credit not allowed for both STAT 604 and BUS 604.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 605 Theory of Sampling Techniques Credits: 3 (3-0-0)
Course Description: Survey designs; simple random, stratified, cluster samples; theory of estimation; optimization techniques for minimum variance or costs.
Prerequisite: (STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315) and (STAT 430).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 620 Introduction to Measure Theoretic Probability Credits: 3 (3-0-0)
Course Description: Introduction to rigorous probability theory in real Euclidean spaces based on a foundation of measure theory.
Prerequisite: STAT 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 623 Spatial Statistics Credits: 3 (3-0-0)
Course Description: Spatial autocorrelation, geostatistical models and kriging, analysis/modeling of point patterns, discretely-indexed spatial models.
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 640 Design and Linear Modeling I Credits: 4 (4-0-0)
Course Description: Introduction to linear models; experimental design; fixed, random, and mixed models.
Prerequisite: MATH 369 and STAT 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 645 Categorical Data Analysis and GLIM Credits: 3 (3-0-0)
Course Description: Generalized linear models, binary and polytomous data, log linear models, quasilikelihood, survival data models.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 640.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 650 Design and Linear Modeling II Credits: 3 (3-0-0)
Course Description: Mixed factorials; response surface methodology; Taguchi methods; variance components.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 673 Hierarchical Modeling in Ecology Credits: 3 (3-0-0)
Also Offered As: FW 673.
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both STAT 673 and FW 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675A Topics in Statistical Methods: Sampling Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675B Topics in Statistical Methods: Design Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
STAT 675C  Topics in Statistical Methods: Multivariate and Regression Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675D  Topics in Statistical Methods: Computer Intensive Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675F  Topics in Statistical Methods: Robustness and Nonparametric Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675I  Topics in Statistical Methods: Industrial Statistical Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675J  Topics in Statistical Methods: Reliability  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675K  Topics in Statistical Methods: Bayesian Statistics  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675L  Topics in Statistical Methods: Medical/Pharmaceutical Statistical Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 684  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Guidance and instruction in effective teaching of college courses in statistics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in M.S. or Ph.D. program in statistics.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 720  Probability Theory  Credits: 3 (3-0-0)
Course Description: Measure theoretic probability, characteristic functions; convergence, laws of large numbers; central limit, extreme value, asymptotic theory.
Prerequisite: STAT 620.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 721  Applied Probability and Stochastic Processes I  Credits: 3 (3-0-0)
Course Description: General theory of processes; Markov processes in discrete, continuous time; review of martingales, random walks; renewal and regenerative processes.
Prerequisite: STAT 720.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 722  Applied Probability and Stochastic Processes II  Credits: 3 (3-0-0)
Course Description: Brownian motion, diffusion, stochastic differential equations; weak convergence, central limit theorems. Applications in engineering, natural sciences.
Prerequisite: STAT 720.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
STAT 725  Time Series and Stationary Processes  Credits: 3 (3-0-0)
Course Description: Spectral theory of multivariate stationary processes; estimation, testing for spectral, linear, AR-MA representations; best linear predictors, filters.
Prerequisite: STAT 720 and STAT 730.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 730  Advanced Theory of Statistics I  Credits: 4 (4-0-0)
Course Description: Minimal sufficiency, maximal invariance; Neyman-Pearson theory; Fisher, Kullback-Leibler information; asymptotic properties of maximum-likelihood methods.
Prerequisite: STAT 530 and STAT 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 731  Advanced Theory of Statistics II  Credits: 3 (3-0-0)
Course Description: Decision-theory model; Bayes, E-Bayes, complete, and admissible classes; applications to sequential analysis and design of experiments.
Prerequisite: STAT 730.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 740  Advanced Statistical Methods  Credits: 3 (3-0-0)
Course Description: Generalized additive models; recursive partitioning regression and classification; graphical models and belief networks; spatial statistics.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 750  Advanced Theory of Design  Credits: 3 (3-0-0)
Course Description: Information theory; design evaluation, factorial designs and optimal designs, orthogonal and balanced arrays, designs with discrete/continuous factors.
Prerequisite: STAT 650.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 760  Theory of Multivariate Statistics  Credits: 3 (3-0-0)
Course Description: Theory of multivariate normal; maximum-likelihood inference, union-intersection testing for single sample; theory of a multivariate linear model.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 770  Approximation Theory and Methods  Credits: 3 (3-0-0)
Course Description: Edgeworth expansions, saddlepoint methods; applications of weak convergence and other approximation methods in mathematical statistics.
Prerequisite: STAT 730.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 792  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 793  Seminar on Advanced Statistical Methods  Credits: 3 (0-0-3)
Course Description:
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730.
May be taken up to two times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 796  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Major in Statistics

Statistics is the science of modeling, summarizing, and analyzing data. Statisticians help people produce trustworthy data, analyze the data, and present the results in a useful manner. Statisticians work with people from other professional backgrounds to solve practical problems. They provide crucial guidance in determining what information is reliable and which predictions can be trusted. An exciting aspect of the field is the diversity of areas where statistical methods are used; this is one reason for continuing strong demand for well-trained statisticians. With the popularity of big data and the focus on quantitative analysis in many fields, there will continue to be a high demand for graduates with a statistics major or minor. Students who succeed in the field of statistics
typically have strong quantitative skills, analytical minds, and like to help other people solve problems.

Learning Outcomes
Students completing this program will be able to:

• Conceptualize analytical questions in terms of a model,
• Apply their knowledge of the core set of statistical methods,
• Perform data analysis using statistical software,
• Interpret and communicate statistical results,
• Either attend graduate school in statistics or find professional employment in a statistics field upon completion of a statistics major.

Effective Fall 2016
A minimum grade of C is required in each mathematics, statistics, and computer science course required for the major.

Freshman

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<th>Description</th>
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<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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<td>STAT 158</td>
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<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
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<td>Global and Cultural Awareness</td>
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<td>Historical Perspectives</td>
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Electives

Total Credits 3E

Sophomore

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<td>STAT 342</td>
<td>Statistical Data Analysis II</td>
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Select one group from the following:

Group A:

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Group B:

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<td>Introduction to Unix</td>
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<tr>
<td>CS 156</td>
<td>Introduction to C Programming I</td>
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In addition to CS 155 and CS 156, select at least two of the following:

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<td>Mathematical Algorithms in C</td>
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<td>MATH 151</td>
<td>Mathematical Algorithms in Matlab I</td>
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<td>MATH 152</td>
<td>Mathematical Algorithms in Maple</td>
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Biological and Physical Sciences

Total Credits 3A

Electives

Total Credits 3D

Junior

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Major in Statistics

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<td>STAT 420</td>
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<td>STAT 430</td>
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Select one course from the following:
- STAT 400   Statistical Computing
- STAT 440   Bayesian Data Analysis

Select one course from the following:
- STAT 305   Sampling Techniques
- STAT 460   Applied Multivariate Analysis

Arts and Humanities 3B 6
Social and Behavioral Sciences 3C 3
Upper-Division CS/MATH/STAT Electives 1 3

Total Credits 30

Senior

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 472</td>
<td>Statistical Consulting</td>
<td>4A,4B,4C 3</td>
</tr>
<tr>
<td>Upper-Division CS/MATH/STAT Elective 1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives 2</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 30

Program Total Credits: 120

1. Select upper-division (300- to 400-level) computer science, mathematics, or statistics courses (excluding courses ending in -82 to-99).
2. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To Prepare for First Semester: The Curriculum for the Statistics Major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. A minimum grade of C (2.000) is required in all Mathematics, Statistics, and Computer Science courses which are required by the major.

### Freshman

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td></td>
<td>X</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MATH 160</td>
<td></td>
<td>X</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>STAT 158</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3E</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>Elective</td>
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</table>

Total Credits 14

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 161</td>
<td></td>
<td>X</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td>STAT 315</td>
<td></td>
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<td>3</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td>3D</td>
<td>3</td>
<td></td>
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<tr>
<td>Electives</td>
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<td></td>
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Total Credits 16

### Sophomore

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select 4 credits from one of the following groups:</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Group A:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS 163</td>
<td>Java (CS1) No Prior Programming</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CS 164</td>
<td>Java (CS1) Prior Programming</td>
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</tbody>
</table>
Group B:

- CS 155 Introduction to Unix
- CS 156 Introduction to C Programming I

In addition to CS 155 or CS 156, select at least two of the following:

- CS 157 Introduction to C Programming II
- CS 158/ MATH 158 Mathematical Algorithms in C
- MATH 151 Mathematical Algorithms in Matlab I
- MATH 152 Mathematical Algorithms in Maple
- MATH 261 Calculus for Physical Scientists III
- STAT 341 Statistical Data Analysis I

Biological and Physical Sciences

<table>
<thead>
<tr>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>3A</td>
</tr>
</tbody>
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Total Credits: 14

**Semester 4**

<table>
<thead>
<tr>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JTC 300</td>
<td>Professional and Technical Communication (GT-CO3)</td>
<td>2</td>
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<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>STAT 342</td>
<td>Statistical Data Analysis II</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biological and Physical Sciences</td>
<td></td>
<td>3A</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>STAT 341 and STAT 342 must be completed by the end of Semester 4.</td>
<td>X</td>
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Total Credits: 16

**Junior**

<table>
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<th>Course Title</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 317</td>
<td>Advanced Calculus of One Variable</td>
<td></td>
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</tr>
<tr>
<td>STAT 420</td>
<td>Probability and Mathematical Statistics I</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>Select one course from the following:</td>
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<td>3</td>
</tr>
<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>STAT 460</td>
<td>Applied Multivariate Analysis</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
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<td>3C</td>
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Total Credits: 16

**Semester 6**

<table>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>STAT 358</td>
<td>Introduction to Statistical Computing in SAS</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>STAT 430</td>
<td>Probability and Mathematical Statistics II</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Select one course from the following:</td>
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<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>STAT 400</td>
<td>Statistical Computing</td>
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<td>STAT 440</td>
<td>Bayesian Data Analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td>3B</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division CS/MATH/STAT Elective</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>STAT 420 and STAT 430 must be completed by the end of Semester 6.</td>
<td>X</td>
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</table>

Total Credits: 14

**Senior**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
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<tr>
<td>Electives</td>
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Total Credits: 15

**Semester 8**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 472</td>
<td>Statistical Consulting</td>
<td>X</td>
<td></td>
<td>4A,4B,4C</td>
<td>3</td>
</tr>
<tr>
<td>Upper-Division CS/MATH/STAT Elective</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

Total Credits: 15
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

Master of Applied Statistics, Plan C (M.A.S.)

Effective Spring 2015

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>STAA 551</td>
<td>Regression Models and Applications</td>
<td>2</td>
</tr>
<tr>
<td>STAA 552</td>
<td>Generalized Regression Models</td>
<td>2</td>
</tr>
<tr>
<td>STAA 553</td>
<td>Experimental Design</td>
<td>2</td>
</tr>
<tr>
<td>STAA 554</td>
<td>Mixed Models</td>
<td>2</td>
</tr>
<tr>
<td>STAA 556</td>
<td>Statistical Consulting</td>
<td>3</td>
</tr>
<tr>
<td>STAA 561</td>
<td>Probability with Applications</td>
<td>2</td>
</tr>
<tr>
<td>STAA 562</td>
<td>Mathematical Statistics with Applications</td>
<td>2</td>
</tr>
<tr>
<td>STAA 565</td>
<td>Quantitative Reasoning</td>
<td>1</td>
</tr>
<tr>
<td>STAA 566</td>
<td>Computational and Graphical Methods</td>
<td>1</td>
</tr>
<tr>
<td>STAA 567</td>
<td>Computational and Simulation Methods</td>
<td>1</td>
</tr>
<tr>
<td>STAA 568</td>
<td>Topics Industrial/Organizational Statistics</td>
<td>1</td>
</tr>
<tr>
<td>STAA 572</td>
<td>Nonparametric Methods</td>
<td>2</td>
</tr>
<tr>
<td>STAA 573</td>
<td>Analysis of Time Series</td>
<td>2</td>
</tr>
<tr>
<td>STAA 571</td>
<td>Survey Statistics</td>
<td>2</td>
</tr>
<tr>
<td>STAA 574</td>
<td>Methods in Multivariate Analysis</td>
<td>2</td>
</tr>
<tr>
<td>STAA 575</td>
<td>Applied Bayesian Statistics</td>
<td>2</td>
</tr>
<tr>
<td>STAA 576</td>
<td>Methods in Environmental Statistics</td>
<td>2</td>
</tr>
<tr>
<td>STAA 577</td>
<td>Statistical Learning and Data Mining</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Credits 31

A minimum of 31 credits are required to complete this program.

Minor in Applied Statistics

The minor in Applied Statistics is designed for students pursuing non-calculus based majors. The minor in Applied Statistics is a great way for students to highlight their quantitative abilities when applying for jobs and graduate school.

Requirements

Effective Spring 2017

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C must be achieved in all statistics courses (STAT subject code and joint-listed) required for the minor in applied statistics.

Students with a calculus background should take STAT 315 from Group A. Everyone else should take STAT 301.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP A (Select one):</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>STAA 301</td>
<td>Introduction to Statistical Methods</td>
<td></td>
</tr>
<tr>
<td>STAA 307</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
<tr>
<td>STAA 311</td>
<td>Statistics for Behavioral Sciences I</td>
<td></td>
</tr>
<tr>
<td>STAA 315</td>
<td>Statistics for Engineers and Scientists</td>
<td></td>
</tr>
</tbody>
</table>

GROUP B (Select one):                          | 3       |
| STAA 341 | Statistical Data Analysis I          |         |
| STAA 342 | Statistical Data Analysis II         |         |
| STAA 472 | Statistical Consulting               |         |

Electives: choose six credits from the following, or permission of advisor: 6

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 311</td>
<td>Linear System Analysis I</td>
<td></td>
</tr>
<tr>
<td>ECE 312</td>
<td>Linear System Analysis II</td>
<td></td>
</tr>
<tr>
<td>ECON 335</td>
<td>Introduction to Econometrics</td>
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</tr>
<tr>
<td>ECON 435</td>
<td>Economic Forecasting</td>
<td></td>
</tr>
<tr>
<td>F 321</td>
<td>Forest Biometry</td>
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<tr>
<td>F 422</td>
<td>Quantitative Methods in Forest Management</td>
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<tr>
<td>FW 370</td>
<td>Design of Fish and Wildlife Projects</td>
<td></td>
</tr>
<tr>
<td>FW 471</td>
<td>Wildlife Data Collection and Analysis</td>
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</tr>
<tr>
<td>MATH 369</td>
<td>Linear Algebra I</td>
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<tr>
<td>MATH 435</td>
<td>Projects in Applied Mathematics</td>
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<tr>
<td>MATH 450</td>
<td>Introduction to Numerical Analysis I</td>
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<tr>
<td>MATH 451</td>
<td>Introduction to Numerical Analysis II</td>
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<tr>
<td>MECH 417</td>
<td>Control Systems</td>
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<tr>
<td>MGT 301</td>
<td>Supply Chain Management</td>
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<tr>
<td>MGT 475</td>
<td>International Business Management</td>
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<tr>
<td>NR 421</td>
<td>Natural Resources Sampling</td>
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<tr>
<td>NR 422</td>
<td>GIS Applications in Natural Resource Management</td>
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</tr>
<tr>
<td>PSY 317</td>
<td>Social Psychology Laboratory</td>
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<tr>
<td>PSY 370</td>
<td>Psychological Measurement and Testing</td>
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<tr>
<td>PSY 371</td>
<td>Psychological Measurement and Testing Laboratory</td>
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</tr>
<tr>
<td>STAT 400</td>
<td>Statistical Computing</td>
<td></td>
</tr>
<tr>
<td>STAT 420</td>
<td>Probability and Mathematical Statistics I</td>
<td></td>
</tr>
<tr>
<td>STAT 421</td>
<td>Introduction to Stochastic Processes</td>
<td></td>
</tr>
<tr>
<td>STAT 430</td>
<td>Probability and Mathematical Statistics II</td>
<td></td>
</tr>
<tr>
<td>STAT 440</td>
<td>Bayesian Data Analysis</td>
<td></td>
</tr>
<tr>
<td>STAT 460</td>
<td>Applied Multivariate Analysis</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 21
Electives approved by the undergraduate advisor in statistics or the department chair.

**Minor in Statistics**

The minor in Statistics is designed for students with majors that require coursework in calculus.

**Requirements**

**Effective Spring 2017**

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C must be achieved in all statistics courses (STAT subject code and dual listed) required for the minor in statistics.

Students in the biological and social sciences who are interested in applications of statistical methods should take STAT 301 (or STAT 307 or STAT 311) and STAT 305. Students in the physical sciences who are interested in applications of statistical methods should take STAT 315 and STAT 460. Students interested in statistical theory should take STAT 420 and STAT 430.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP A (Select one):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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</tr>
<tr>
<td>STAT 311</td>
<td>Statistics for Behavioral Sciences I</td>
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<tr>
<td>STAT 315</td>
<td>Statistics for Engineers and Scientists</td>
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</tr>
<tr>
<td>GROUP B (Select one):</td>
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<td></td>
</tr>
<tr>
<td>STAT 158</td>
<td>Introduction to R Programming</td>
<td>3</td>
</tr>
<tr>
<td>STAT 358</td>
<td>Introduction to Statistical Computing in SAS</td>
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</tr>
<tr>
<td>STAT 400</td>
<td>Statistical Computing</td>
<td></td>
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<tr>
<td>STAT 420</td>
<td>Probability and Mathematical Statistics I</td>
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</tr>
<tr>
<td>STAT 440</td>
<td>Bayesian Data Analysis</td>
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</tr>
<tr>
<td>GROUP C (Must take BOTH courses)</td>
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</tr>
<tr>
<td>STAT 341</td>
<td>Statistical Data Analysis I</td>
<td>6</td>
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<tr>
<td>STAT 342</td>
<td>Statistical Data Analysis II</td>
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<tr>
<td>GROUP D (Select one):</td>
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<tr>
<td>STAT 305</td>
<td>Sampling Techniques</td>
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<tr>
<td>STAT 430</td>
<td>Probability and Mathematical Statistics II</td>
<td></td>
</tr>
<tr>
<td>STAT 460</td>
<td>Applied Multivariate Analysis</td>
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<tr>
<td>Electives: choose 6 credits of the following:</td>
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</tr>
<tr>
<td>ECE 311</td>
<td>Linear System Analysis I</td>
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<tr>
<td>ECE 312</td>
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<tr>
<td>ECON 335</td>
<td>Introduction to Econometrics</td>
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<td>AREC 335</td>
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<tr>
<td>ECON 435</td>
<td>Economic Forecasting</td>
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</tr>
</tbody>
</table>

Total Credits: 21

---

**College of Veterinary Medicine and Biomedical Sciences**

Office in Anatomy-Zoology Building, Room W102  
(970) 491-7051  
csu-cvmbs.colostate.edu (http://csu-cvmbs.colostate.edu)

Professor Mark Stetter, Dean  
Professor Sandra Quackenbush, Associate Dean for Academic and Student Affairs  
Professor Melinda Frye, Associate Dean for Veterinary Academic and Student Affairs  
Professor Susan VandeWoude, Associate Dean for Research

**Undergraduate Majors**

- Biomedical Sciences
- Environmental Health
- Microbiology
• Neuroscience

Undergraduate Minors

• Biomedical Sciences
• Environmental Health
• Microbiology

College Programs

A concern for health and the diseases of animals and humans provides the unifying theme for the undergraduate, professional, and graduate programs of the College of Veterinary Medicine and Biomedical Sciences (CVMBS)—a manifestation of the concept of One Health. The College combines teaching, research, and public service activities in basic biomedical disciplines such as anatomy, neurobiology, physiology, microbiology, pathology, and radiological health sciences, with applied disciplines such as clinical veterinary medicine and surgery, diagnostic imaging, radiology, clinical laboratory sciences, epidemiology, and environmental health sciences. Graduates of the College in either the veterinary sciences or the biomedical sciences serve society in the broadest sense: they represent the concept that there is but “one medicine” supporting “one health” with human and animal health intimately interrelated within their environments.

Major Courses of Study

The CVMBS offers undergraduate, professional, and graduate courses of study. There are four undergraduate programs leading to the Bachelor of Science, with majors in Neuroscience in partnership with the College of Natural Sciences, Biomedical Sciences, Environmental Health and Microbiology. The Bachelor of Science degree requires a minimum of 120 credits with a minimum of 42 credits in upper-division courses. The four-year professional veterinary medical program leads to the Doctor of Veterinary Medicine degree; students in this program typically complete a baccalaureate degree prior to program admission. Graduate studies in each of the four departments of the college lead to Master of Science and Doctor of Philosophy degrees with selected professional master’s programs serving emerging needs in society and through practitioner skill development.

Education Abroad

Education abroad programs are available to students in the CVMBS. Because the knowledge of at least one other culture is valuable in understanding our own, students are strongly encouraged to study outside the United States. Students interested in education abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (http://international.colostate.edu) in Laurel Hall.

Continuing and Distance Education

The CVMBS supports the veterinary profession by offering continuing education courses that enable practicing veterinarians to obtain new medical information and meet the Colorado Veterinary Practice Act continuing education requirements for re-licensure. The College shares responsibility for continuing education and maintains close liaison with the American Veterinary Medical Association (AVMA), the Colorado Veterinary Medical Association (CVMA), the Colorado Board of Veterinary Medicine, and the Western Interstate Commission for Higher Education (WICHE). Innovative programs like Health Professions preparation— for students finishing essential courses to prepare to pursue health professions—are offered through CSU Online.

Graduate Programs

Programs leading to the Master of Science and Doctor of Philosophy degrees are offered in all departments of the College.

Students with Bachelor of Science or Doctor of Veterinary Medicine (DVM) degrees or well-qualified students who are currently pursuing veterinary medicine degrees, are eligible to study for advanced degrees in the Departments of Biomedical Sciences; Clinical Sciences; Environmental and Radiological Health Sciences; and Microbiology, Immunology, and Pathology.

The CVMBS and the College of Business have created a combined five-year DVM/MBA program of study that can result in earning both the Master of Business Administration (MBA) degree and the DVM degree. Applicants to the DVM program are encouraged to consider extending their veterinary education to include a one-year start to an MBA degree. After successfully completing the first year of the MBA program, students will be guaranteed admission to the first year of the DVM program and will be expected to complete the remaining MBA course requirements concurrently with the first two years of the DVM curriculum. This program was undertaken to improve training of our students in veterinary practice management, business and economics beyond what is currently offered as core content within the DVM curriculum.

Combining the expertise from public/environmental health and veterinary medicine and partnering with the Colorado School of Public Health (http://publichealth.ucdenver.edu), the College has created a five-year DVM/MPH program which will provide specialty training in veterinary medicine and public health. Students spend the first year in the MPH program, years 2 and 3 jointly in the DVM and MPH programs, and then years 4 and 5 focusing on completing the DVM requirements. Given the threats to public health from zoonotic diseases, changing ecosystems due to climate, and enhanced need for health professionals versed in the interplay of human, animal and environmental factors, DVM/MPH graduates bring a critical skill set to bear on issues of significant public impact.

The CVMBS and the Department of Animal Sciences within the College of Agricultural Sciences have partnered in developing a DVM/MS-Animal Sciences 5-year combined degree, aimed at offering robust training in livestock production, animal health, industry and economics to future livestock veterinarians. Students will be optimally equipped to provide animal health services, advise individuals within production units, provide leadership within professional organizations, and contribute to knowledge development through research. Students complete graduate coursework in Animal Sciences and initiate clinical/field research in the first year, then complete research requirements during the subsequent 4 years of DVM training.

There is a national need for veterinarians who can serve as the bridge between research and all aspects of animal health and welfare. The College has developed a 7-year DVM/PhD program that will integrate clinical and research training to provide a dual degree to selected candidates. Numerous outstanding research opportunities exist in diverse areas that complement DVM training, including cancer biology, infectious disease, neurosciences, reproductive biology, epidemiology, orthopedic sciences, environmental health and toxicology. The typical DVM/PhD program progresses as follows:

• basic graduate study and laboratory rotations (year 1)
• first two years of DVM training plus electives and graduate work (years 2 and 3)
• exclusive research work in the PhD program (years 4 and 5)
• completion of the DVM training (years 6 and 7)

For detailed information about CVMBS graduate programs, view the College Academic Departments site (http://csu-cvmbs.colostate.edu/academics/Pages/default.aspx). Information on DVM combined degrees may be viewed on the CVMBS site (http://csu-cvmbs.colostate.edu/dvm-program/Pages/default.aspx).

**Interdepartmental Program**

**Doctor of Veterinary Medicine**

A four-year professional program in Veterinary Medicine is offered annually to approximately 148 students. Each year, approximately 138 students are admitted to the DVM program located on the main CSU campus in Fort Collins, Colorado. Additionally, up to 10 students are admitted to the CSU-University of Alaska Fairbanks (UAF) 2+2 DVM Program, completing the first 2 years of the 4-year program in Fairbanks, Alaska, and joining the larger cohort to complete years 3 and 4 in Fort Collins. These students graduate with a DVM degree from CSU, and enjoy unique opportunities at UAF in small animal sports medicine, rural outreach, conservation and wildlife medicine.

Because the number of applicants exceeds the number of students who can be admitted to any class, the members of the Admissions Committee for the CVMBS carefully evaluate each applicant to recommend those best qualified. Information concerning the academic program which leads to the DVM degree may be found in the Graduate and Professional Bulletin or online (http://csu-cvmbs.colostate.edu/dvm-program/Pages/default.aspx).

The full course of study requires four years beyond completion of the pre-veterinary requirements. While exceptional students may complete pre-veterinary requirements in two to three years and then be accepted into the DVM Program, it is much more common that students complete a baccalaureate degree or graduate degree, followed by four years in the professional program.

**Pre-Veterinary Training for the Doctor of Veterinary Medicine Program**

Students may complete pre-professional (pre-veterinary) training at any accredited institution whether these courses are part of a regularly offered baccalaureate program or whether the courses are taken as “stand alone” choices independent of a degree program. However, courses must be substantially equivalent in subject content and level as offered for pre-veterinary students at CSU.

Inquiries regarding equivalent or substitute courses that may be taken specifically to meet pre-veterinary preparation requirements should be directed to DVMAdmissions@colostate.edu. There is also a format for requests Prerequisite Substitute Course Request (http://csu-cvmbs.colostate.edu/Documents/dvm-preparatory-coursework-guide.pdf), which can be submitted to DVMAdmissions@colostate.edu.

While CSU students meeting the pre-veterinary requirements as an integral part of a degree program will take a higher number of credits, the minimum course requirements for admission to the DVM program, exclusive of electives, are:

- Arts, Humanities, Behavioral and Social Sciences — at least 12 semester credits. (The required credits for English composition explicit in most programs of study as all university requirements—see category that follows—do not fulfill these requirements.)
- Biological Sciences — at least three semester credits in genetics and a laboratory associated with a biological science course.
- Chemistry — at least three semester credits in biochemistry (requiring organic chemistry as a prerequisite) and a laboratory associated with a chemistry course.
- English Composition — at least three semester credits.
- Physics — at least four semester credits with laboratory.
- Statistics — at least three semester credits (upper-division course preferred).

Additional courses that are not required, but highly recommended, are anatomy, cell biology, developmental biology, histology, microbiology, nutrition, physiology, and computer science. These courses will enhance the student’s preparation for the DVM program.

The pre-veterinary requirement includes the previous categories and credits plus additional credits to total 60 semester credits that must be completed prior to admission to the DVM program. Students may apply prior to completing all prerequisite requirements; however, in order to assure the most competitive application, one is encouraged to have the majority of the prerequisites completed at time of application. The clear majority of students will complete the pre-veterinary requirements as part of a baccalaureate program. Exceptional students may apply for admission to the DVM program when only the pre-veterinary requirements are met.

Students who wish to pursue pre-professional veterinary medicine training (sufficient to meet minimum requirements to apply to the CSU DVM Program) through courses offered at CSU as part of their undergraduate degree program will find detailed information online (http://csu-cvmbs.colostate.edu/Documents/dvm-preparatory-coursework-guide.pdf).

**Food Animal Veterinary Career Incentive Program**

There are many vacancies and numerous career opportunities in all sectors of private livestock practice, including mixed animal practice and specialty practices in dairy cattle, beef cow-calf, beef feedlots, sheep, small ruminants and swine. There are also many opportunities in public practice including food safety and inspection, communicable disease management, and regulatory veterinary medicine. Many practitioners and producers have found it difficult to recruit new graduates into food and fiber animal practice, especially in rural communities. Reduced veterinary participation in food and fiber production animal medicine may contribute to increased vulnerability of livestock industries to emerging infectious diseases, exotic and zoonotic diseases, public health risks from food safety and quality problems, lowered public confidence in animal agricultural products as well as threats to the national economy. Thus, the overarching goal of the Food Animal Veterinary Career Incentive Program (FAVCIP) is to create a sustainable source of future veterinarians for underserved disciplines and geographic regions central to the future of safe and successful food and fiber animal production. This program includes a plan of academic work, experience, and mentoring that encompasses undergraduate and veterinary medical education and meets specific needs of animal agriculture through a cooperative venture of the CVMBS and the Department of Animal Sciences in the College of Agricultural Sciences. It should be noted that DVM students who do not complete the FAVCIP may still focus
coursework and clinical experiences on livestock medicine, especially in years 3 and 4.

Undergraduate students with a strong interest in the discipline will be encouraged to follow the FAVCIP curriculum and program requirements [http://csu-cvmb.colostate.edu/dvm-program/Pages/DVM-Special-Programs.aspx] as they complete their Bachelor of Science in Animal Science at CSU.

### Department of Biomedical Sciences

Office in Physiology Building, Room 102  
(970) 491-6187  
cvmb.colostate.edu/bms [http://www.cvmbs.colostate.edu/bms]

Professor Colin Clay, Head

### Undergraduate

#### Majors

- Major in Biomedical Sciences
- Major in Neuroscience  
  - Behavioral and Cognitive Neuroscience Concentration  
  - Cell and Molecular Neuroscience Concentration

#### Minors

- Minor in Biomedical Sciences

### Graduate

#### Graduate Programs in Biomedical Sciences

Graduate programs lead to the Master of Science and Doctor of Philosophy degrees in Biomedical Sciences. Students interested in graduate work should refer to the Graduate and Professional Bulletin or the Department of Biomedical Sciences [http://www.cvmbs.colostate.edu/bms].

### Master Programs

- Master of Science in Biomedical Sciences, Plan A
- Master of Science in Biomedical Sciences, Plan B, Coursework  
- Master of Science in Biomedical Sciences, Plan B, Paper  
- Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization

### Ph.D.

- Ph.D. in Biomedical Sciences

### Courses

#### Biomedical Sciences (BMS)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite</th>
<th>Course Description</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS 192</td>
<td>First Year Seminar in Biomedical Sciences</td>
<td>1 (0-0-1)</td>
<td>None</td>
<td>The university and its resources, college survival skills, careers in the biomedical sciences; current issues in health and biotechnology.</td>
<td>Traditional</td>
</tr>
<tr>
<td>BMS 200</td>
<td>Concepts in Human Anatomy and Physiology</td>
<td>1 (0-0-1)</td>
<td>None</td>
<td>Basic concepts in the anatomy and physiology of the human body.</td>
<td>Traditional</td>
</tr>
<tr>
<td>BMS 260</td>
<td>Biomedical Sciences</td>
<td>3 (2-0-1)</td>
<td>LIFE 102</td>
<td>Opportunities and challenges in biomedical sciences; business of science, ethics, model systems, cellular and systemic physiology.</td>
<td>Traditional</td>
</tr>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td>4 (4-0-0)</td>
<td>(BZ 101 or BZ 110 or LIFE 102) and (CHEM 103 or CHEM 107 or CHEM 111).</td>
<td>Physiology of humans.</td>
<td>Traditional</td>
</tr>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
<td>5 (3-2-1)</td>
<td>BZ 110 or LIFE 102</td>
<td>Structure and function of the human body. Study of prospected human cadavers; clinical applications; living anatomy.</td>
<td>Traditional</td>
</tr>
</tbody>
</table>

### Registration Information

- Sections may be offered: Online.
- Must register for lecture and recitation.
- Must have concurrent registration in BMS 300.
- Must register for lecture and recitation.
- Must register for lecture, laboratory, and recitation.
BMS 302 Laboratory in Principles of Physiology  Credits: 2 (1-3-0)
Course Description: Basic physiology lab exercises.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 302 and BMS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 320 Virtual Laboratory in Physiology  Credits: 2 (0-4-0)
Course Description: Physiology lab exercises using a virtual laboratory simulation system.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Credit not allowed for both BMS 320 and BMS 302. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 325 Cellular Neurobiology  Credits: 3 (3-0-0)
Course Description: Cellular and molecular bases of nervous system function and behavior.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 330 Microscopic Anatomy  Credits: 4 (3-3-0)
Course Description: Microscopic anatomy of mammalian tissue.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 330 and VS 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 345 Functional Neuroanatomy  Credits: 4 (3-2-0)
Course Description: Functional systems and circuits of the human brain and spinal cord.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 360 Fundamentals of Physiology  Credits: 4 (4-0-0)
Course Description: Cell, tissue, and organ function related to integrated whole body function.
Prerequisite: (BZ 110 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 384 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Supervision by and work with graduate teaching assistants in small group learning sessions involving students enrolled in BMS 300.
Prerequisite: BMS 300 or BMS 360.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 405 Nerve and Muscle-Toxins, Trauma and Disease  Credits: 3 (3-0-0)
Course Description: Structure, composition, function of nerves and muscles, etiology of genetic and autoimmune neuromuscular diseases, alteration by toxins and nerve gas.
Prerequisite: BMS 325 or BMS 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 409 Human and Animal Reproductive Biology  Credits: 3 (3-0-0)
Course Description: Basis for male and female reproductive function in humans and animals.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 420 Cardiopulmonary Physiology  Credits: 3 (3-0-0)
Course Description: Normal and pathophysiology of cardiovascular and pulmonary systems.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BMS 421 Perspectives in Cardiopulmonary Diseases Credits: 2 (1-0-1)
Course Description: Pathophysiology of cardiopulmonary diseases.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 420. Biomedical sciences majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 425 Introduction to Systems Neurobiology Credits: 3 (3-0-0)
Course Description: Functional organization of the nervous system at the circuit level in producing simple and complex behaviors, sensations and cognition.
Prerequisite: BMS 325.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 430 Endocrinology Credits: 3 (3-0-0)
Course Description: Physiology of the glands of internal secretion.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 450 Pharmacology Credits: 3 (3-0-0)
Course Description: Pharmacologic principles, absorption, distribution, metabolism, excretion, side effects, and actions of drugs.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 460 Essentials of Pathophysiology Credits: 3 (3-0-0)
Course Description: Integration of different facets of mechanisms underlying health and disease.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 461 Pathophysiology Perspectives Credits: 2 (0-0-2)
Course Description: Capstone course in pathophysiology for Biomedical Sciences majors.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 460. Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Work/research experience with an approved preceptor outside of a university laboratory.
Prerequisite: None.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 496A Honors: Human Gross Anatomy Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Human Gross Anatomy.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496B Honors: Physiology Lab Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Lab.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496C Honors: Physiology Case Studies Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Case Studies.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496D Honors: Animal Gross Anatomy Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Animal Gross Anatomy.
Prerequisite: BMS 305, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed research in biomedical sciences.
Prerequisite: BMS 300 or BMS 360.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 500 Mammalian Physiology I Credits: 4 (4-0-0)
Course Description: Cell physiology of nerve, skeletal, cardiac and smooth muscle with an emphasis on how cellular functions integrate into systems behavior.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Credit not allowed for both BMS 500 and NB 501. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BMS 501 Mammalian Physiology II Credits: 4 (4-0-0)
Course Description: Respiratory, renal, digestive, endocrine, metabolic, and reproductive function.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 503 Developmental Neurobiology Credits: 3 (3-0-0)
Also Offered As: NB 503.
Course Description: Molecular mechanisms involved in development of nervous system including differentiation, growth, pathfinding, and synaptogenesis.
Prerequisite: (BIO 100 to 481 or BZ 100 to 481 or LIFE 100 to 481) and (BC 100 to 481 and PH 100 to 481) and (MATH 141 or MATH 155 or MATH 160 to 161 or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both BMS 503 and NB 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 505 Neuronal Circuits, Systems and Behavior Credits: 3 (3-0-0)
Also Offered As: NB 505.
Course Description: Anatomical and physiological organization of the nervous system.
Prerequisite: BMS 325 or BMS 500 or NB 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 521 Comparative Reproductive Physiology Credits: 3 (3-0-0)
Course Description: A comparative overview of reproduction in vertebrates (focusing on mammals) emphasizing both conserved and species-specific aspects of physiology.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 531 Domestic Animal Dissection Credits: 3 (0-9-0)
Course Description: Dissection of domestic animals.
Prerequisite: BMS 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 545 Neuroanatomy Credits: 5 (3-4-0)
Course Description: Nervous system structure and function presented from a systems perspective; applied and comparative aspects are emphasized.
Prerequisite: None.
Registration Information: Written consent of instructor required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 575 Human Anatomy Dissection Credits: 4 (0-8-0)
Course Description: Regional approach to human gross anatomy through laboratory dissection of human cadaver.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 619 Advanced Human Gross Anatomy Credits: 2 (0-0-2)
Course Description: Clinical application of human anatomy through case-based study.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 620 A/B Managing a Career in Science: Survival Skills for Coursework (M.S.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 620 B Managing a Career in Research: Survival Skills for Research (M.S. and Ph.D.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including improving writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 630 A/B Managing a Career in Research: Survival Skills for Coursework (M.S.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 630 B Managing a Career in Research: Survival Skills for Research (M.S. and Ph.D.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including improving writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BMS 640  Reproductive Physiology and Endocrinology  Credits: 4 (4-0-0)
Course Description: Reproductive physiology and endocrinology of vertebrate animals.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 642  Research Techniques for Gametes and Embryos  Credit: 1 (0-3-0)
Course Description: Collection, storage, evaluation, in vitro manipulation, and replacement of sperm, oocytes, embryos, and other reproductive tissues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 692  Seminar-Classics in Neurosciences  Credit: 1 (0-0-1)
Course Description: Review of classic papers in the neurosciences.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695A  Independent Study: Developmental Anatomy  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695B  Independent Study: Microscopic Anatomy  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695C  Independent Study: Neuroanatomy  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695D  Independent Study: Radiographic Anatomy  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695E  Independent Study: Surgical Anatomy  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695F  Independent Study: Gross Anatomy  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 696  Group Study-Neurosciences  Credits: Var[1-3] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BMS 784  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792A  Seminar: Biomedical Sciences  Credits: Var[1-5] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792B  Seminar: Neurophysiology  Credits: Var[1-5] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
BMS 792C Seminar: Reproductive Physiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795A Independent Study: Endocrinology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795B Independent Study: Neurophysiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795C Independent Study: Cell Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795D Independent Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795E Independent Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796C Group Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796B Group Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Major in Biomedical Sciences
An undergraduate degree in Biomedical Sciences prepares students for a wide variety of opportunities which have a basis in cellular and molecular biology, human/animal anatomy and physiology. In addition to enrolling in required courses, students will have opportunities to engage in elective courses and laboratory research in specialty areas of endocrinology, pharmacology, neurophysiology, reproductive physiology, and cardiopulmonary physiology. In this process, students are able to tailor their educational experiences to specific career objectives. The curriculum will prepare graduates to pursue further studies in professional schools for medicine, veterinary medicine, pharmacy, dentistry, and optometry, as well as other programs such as physician assistant and physical therapy. This degree will also prepare students for graduate studies in the biomedical sciences as well as for employment in a variety of innovative and developing fields in biotechnology.

The basic science curriculum meets many requirements for entrance into professional schools. Experiential learning opportunities are encouraged and could include participating in laboratory research, teaching/tutoring in selected courses, volunteer experiences and leadership positions within student club(s), study abroad, internships, and honors curriculum. These opportunities are encouraged with the student’s interests and career goals as the focus.

Learning Outcomes
- Obtain a solid background in anatomy and physiology and be able to integrate knowledge from the molecular to the systemic level
- Demonstrate strong writing and oral communication skills
- Develop scientific hypotheses and experiments to test them
- Work effectively in groups
- Demonstrate effective organization, leadership, and laboratory skills
- Think critically and logically
Potential Occupations

A Bachelor of Science degree in Biomedical Sciences will provide students with a variety of opportunities for further study or employment in the broad area of biomedical sciences. The coursework is designed to prepare students for health-related graduate and professional programs. Post-graduate opportunities will include additional studies in specialty areas of physiology such as neuroscience, reproductive endocrinology, cardiopulmonary, and patho-physiology. Employment opportunities can be found in government at the local, state, and national levels; research in a variety of settings such as university, industry, and private laboratories; education; administration and management; and industry such as biotechnology, pharmaceuticals, and medical devices. Students will be exposed to skill sets which are necessary in a competitive, ever changing job market.

Requirements

Effective Spring 2017

Freshman

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS 260</td>
<td>Biomedical Sciences Major Related Elective</td>
<td>3</td>
<td></td>
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<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
<td>1</td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
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<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td>4</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
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<td>Calculus for Biological Scientists I (GT-MA1)</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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Arts and Humanities

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<tbody>
<tr>
<td></td>
<td>Arts and Humanities</td>
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Social and Behavioral Sciences

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<tbody>
<tr>
<td></td>
<td>Social and Behavioral Sciences</td>
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</tbody>
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Total Credits

32

Sophomore

<table>
<thead>
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<th>Course Code</th>
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<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
</tr>
<tr>
<td>BMS 360</td>
<td>Fundamentals of Physiology</td>
</tr>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
</tr>
<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
</tr>
<tr>
<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
</tr>
<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)</td>
</tr>
<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
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<tr>
<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
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Select one from the following:

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
<td>3</td>
</tr>
</tbody>
</table>

Historical Perspectives

<table>
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<tr>
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<th>Course Title</th>
<th>AUCC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
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</tbody>
</table>

Total Credits

28

Junior

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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</tbody>
</table>

Select one course from the following:

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<thead>
<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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</tr>
<tr>
<td>BMS 305</td>
<td>Domestic Animal Gross Anatomy</td>
<td>3A</td>
</tr>
<tr>
<td>BMS 330</td>
<td>Microscopic Anatomy</td>
<td>3A</td>
</tr>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
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Major Related Electives (See list below)

6
## Advanced Writing

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
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</table>

**Total Credits**: 3

### Senior

Select one group from the following:

**Group A:**
- **BMS 345**: Functional Neuroanatomy 4B
- **BMS 400**: Neuroanatomy Through Clinical Case Studies 4A,4C

**Group B:**
- **BMS 420**: Cardiopulmonary Physiology 4B
- **BMS 421**: Perspectives in Cardiopulmonary Diseases 4A,4C

**Group C:**
- **BMS 460**: Essentials of Pathophysiology 4B
- **BMS 461**: Pathophysiology Perspectives 4A,4C

- **MIP 300**: General Microbiology 3
- **MIP 302**: General Microbiology Laboratory 2

**Major Related Electives (See list below)**

**Electives**

**Total Credits**: 29-30

### Program Total Credits:

**120**

#### Major Related Electives

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
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<tr>
<td>BC 465</td>
<td>Molecular Regulation of Cell Function</td>
<td>3</td>
</tr>
<tr>
<td>BMS 192</td>
<td>First Year Seminar in Biomedical Sciences</td>
<td>1</td>
</tr>
<tr>
<td>BMS 260</td>
<td>Biomedical Sciences</td>
<td>3</td>
</tr>
<tr>
<td>BMS 325</td>
<td>Cellular Neurobiology</td>
<td>3</td>
</tr>
<tr>
<td>BMS 330</td>
<td>Microscopic Anatomy</td>
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</tr>
<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
<td>4</td>
</tr>
<tr>
<td>BMS 384</td>
<td>Supervised College Teaching</td>
<td>1-5</td>
</tr>
<tr>
<td>BMS 405</td>
<td>Nerve and Muscle-Toxins, Trauma and Disease</td>
<td>3</td>
</tr>
<tr>
<td>BMS 409</td>
<td>Human and Animal Reproductive Biology</td>
<td>3</td>
</tr>
<tr>
<td>BMS 420</td>
<td>Cardiopulmonary Physiology</td>
<td>3</td>
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<tr>
<td>BMS 425</td>
<td>Introduction to Systems Neurobiology</td>
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</tr>
<tr>
<td>BMS 430</td>
<td>Endocrinology</td>
<td>3</td>
</tr>
<tr>
<td>BMS 450</td>
<td>Pharmacology</td>
<td>3</td>
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<td>BMS 460</td>
<td>Essentials of Pathophysiology</td>
<td>3</td>
</tr>
<tr>
<td>BMS 487</td>
<td>Internship</td>
<td>1-6</td>
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<tr>
<td>BMS 495</td>
<td>Independent Study</td>
<td>1-18</td>
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<tr>
<td>BMS 496A</td>
<td>Honors: Human Gross Anatomy</td>
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<tr>
<td>BMS 496B</td>
<td>Honors: Physiology Lab</td>
<td>1-3</td>
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<tr>
<td>BMS 496C</td>
<td>Honors: Physiology Case Studies</td>
<td>1-3</td>
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<tr>
<td>BMS 498</td>
<td>Research</td>
<td>1-3</td>
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<tr>
<td>BMS 500</td>
<td>Mammalian Physiology I</td>
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<tr>
<td>BMS 501</td>
<td>Mammalian Physiology II</td>
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<td>BMS 521</td>
<td>Comparative Reproductive Physiology</td>
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</tr>
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<td>BMS 531</td>
<td>Domestic Animal Dissection</td>
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<td>BMS 575</td>
<td>Human Anatomy Dissection</td>
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<td>BZ 220</td>
<td>Introduction to Evolution</td>
<td>3</td>
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<tr>
<td>MIP 342</td>
<td>Immunology</td>
<td>4</td>
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### Major in Biomedical Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MIP 343</td>
<td>Immunology Laboratory</td>
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<tr>
<td>MIP 351</td>
<td>Medical Bacteriology</td>
<td>3</td>
</tr>
<tr>
<td>MIP 352</td>
<td>Medical Bacteriology Laboratory</td>
<td>3</td>
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</tbody>
</table>

1. Students are required to take a minimum total of 15 credits of Major Related Electives, which may include BMS 260. Freshmen must take BMS 260; transfer students may select a course from the Major Related Electives list, or a free elective, each with approval of advisor.

2. Select from department list of Major Related Electives with approval of BMS key advisor.

3. Select enough free electives at student’s discretion to complete degree program of 120 credits. Enough upper division (300- and 400-level) credits must be taken to bring total number of upper division credits to 42.

4. BMS 330 may be taken as a Major Related Elective if either BMS 301 or BMS 305 has already been taken to satisfy the anatomy requirement shown in the junior year of the major.

5. Students may select this course for Major Related Electives if it is not used for All-University Core Curriculum (AUCC) Category 4 in the major.

6. BMS 384 may be taken for a maximum of 3 credits.

7. A maximum total of 3 credits earned in BMS 487, BMS 495, and BMS 498 may be used toward the Major Related Electives for the Biomedical Sciences major. Additional credits earned in these courses will count as free elective credit.

8. Students may select only one of the subtopics from this course to apply toward the Major Related Electives. Students may take the other subtopics as free electives.

### Major Completion Map

**Distinctive Requirements for Degree Program:**

**TO DECLARE MAJOR:** competitive entry controls required and capped enrollment in place. Please see advisor in Department for more information.

**TO PREPARE FOR FIRST SEMESTER:** The curriculum for the Biomedical Sciences major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam.

<table>
<thead>
<tr>
<th>Freshman Semester 1</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Students will be required to take either MATH 155 or MATH 160 in Freshman semester 2. Students who intend to take MATH 160 will need to take MATH 126 in addition to MATH 124 and MATH 125</td>
<td></td>
<td></td>
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<tr>
<td>LIFE 102 Attributes of Living Systems (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>4</td>
<td></td>
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<tr>
<td>CHEM 111 General Chemistry I (GT-SC2)</td>
<td>X</td>
<td>3A</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM 112 General Chemistry Lab I (GT-SC1)</td>
<td>X</td>
<td>3A</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CO 150 College Composition (GT-CO2)</td>
<td>X</td>
<td>1A</td>
<td>3</td>
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<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>MATH 124, MATH 125, and MATH 126 must be completed by the end of Semester 1, if necessary.</td>
<td>X</td>
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<tr>
<td><strong>Total Credits</strong></td>
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<tr>
<td>CHEM 113 General Chemistry II</td>
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<td>CHEM 114 General Chemistry Lab II</td>
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<td>Select one course from the following:</td>
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<tr>
<td>MATH 155 Calculus for Biological Scientists I (GT-MA1)</td>
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<tr>
<td>MATH 160 Calculus for Physical Scientists I (GT-MA1)</td>
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<td>Select one course from the following:</td>
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<tr>
<td>BMS 260 Biomedical Sciences</td>
<td>X</td>
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<tr>
<td>Major Related Elective (see Department List):</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>3B</td>
<td>3</td>
<td></td>
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<tr>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
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<td><strong>Total Credits</strong></td>
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### Sophomore

#### Semester 3

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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
<td>X</td>
<td></td>
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<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
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<td>Select one course from the following:</td>
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<td>STAT 301</td>
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<td>Introduction to Biostatistics</td>
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Historical Perspectives 3D 3

Total Credits 14

#### Semester 4

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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
<td></td>
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<tr>
<td>BMS 360</td>
<td>Fundamentals of Physiology</td>
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<td></td>
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<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
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<td>Modern Organic Chemistry Laboratory</td>
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<td>2</td>
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<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)</td>
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CHEM 341 must be completed by the end of Semester 4. X

Total Credits 14

### Junior

#### Semester 5

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<th>Credits</th>
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<tbody>
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<td>Principles of Biochemistry</td>
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</tr>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<td></td>
<td></td>
<td>3A</td>
</tr>
<tr>
<td>Advanced Writing</td>
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<td></td>
<td></td>
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Major Related Electives (See Department List): 3

Total Credits 15

#### Semester 6

Select one course from the following: 4-5

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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<tr>
<td>BMS 305</td>
<td>Domestic Animal Gross Anatomy</td>
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<tr>
<td>BMS 330</td>
<td>Microscopic Anatomy</td>
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<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
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</table>

Major Related Electives (See Department List): 3

Global and Cultural Awareness 3E 3

Total Credits 15-16

### Senior

#### Semester 7

Select one group from the following: 5

**Group A:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<tr>
<td>BMS 400</td>
<td>Neuroanatomy Through Clinical Case Studies</td>
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**Group B:**

<table>
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<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BMS 420</td>
<td>Cardiopulmonary Physiology</td>
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<td>4B</td>
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<tr>
<td>BMS 421</td>
<td>Perspectives in Cardiopulmonary Diseases</td>
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**Group C:**

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<th>Credits</th>
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<tbody>
<tr>
<td>BMS 460</td>
<td>Essentials of Pathophysiology</td>
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<tr>
<td>BMS 461</td>
<td>Pathophysiology Perspectives</td>
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Major Related Electives (See Department List): 6

Free Electives 3

Total Credits 15-16

#### Semester 8

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<th>AUCC</th>
<th>Credits</th>
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<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
<td>X</td>
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</table>

Total Credits 14
Minor in Biomedical Sciences

The minor in Biomedical Sciences provides students with a useful complement to majors in animal science, biochemistry, biological science, health and exercise science, human development and family studies, microbiology, psychology, and other biomedical science areas. The program offers a variety of courses which serve to broaden the background of students pursuing professional careers in biomedical sciences, human and veterinary medicine, and a variety of health-related disciplines. Candidates begin the program with a course in physiology. The remainder of the required 21 credits is selected to complement the student’s educational goals and interests.

Requirements
Effective Fall 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of C (2.000) in either BMS 300 or BMS 360 will be required for those students who are seeking to graduate with a minor in biomedical sciences and who take one of these courses as fulfillment of the requirements.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Required Courses</td>
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</tr>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
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<tr>
<td>or BMS 360</td>
<td>Fundamentals of Physiology</td>
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<td>Elective Courses</td>
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<td>Select 17 credits from the following:</td>
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<td>BMS 200</td>
<td>Concepts in Human Anatomy and Physiology</td>
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<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
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</tr>
<tr>
<td>BMS 302</td>
<td>Laboratory in Principles of Physiology</td>
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<tr>
<td>BMS 305</td>
<td>Domestic Animal Gross Anatomy</td>
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<tr>
<td>BMS 325</td>
<td>Cellular Neurobiology</td>
<td></td>
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<tr>
<td>BMS 330</td>
<td>Microscopic Anatomy</td>
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<tr>
<td>BMS 345</td>
<td>Functional Neuroanatomy</td>
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<td>BMS 384</td>
<td>Supervised College Teaching</td>
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<tr>
<td>BMS 405</td>
<td>Nerve and Muscle-Toxins, Trauma and Disease</td>
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<td>BMS 409</td>
<td>Human and Animal Reproductive Biology</td>
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<tr>
<td>BMS 420</td>
<td>Cardiopulmonary Physiology</td>
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<tr>
<td>BMS 425</td>
<td>Introduction to Systems Neurobiology</td>
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<td>BMS 430</td>
<td>Endocrinology</td>
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<tr>
<td>BMS 450</td>
<td>Pharmacology</td>
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<td>BMS 495</td>
<td>Independent Study</td>
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Master of Science in Biomedical Sciences, Plan A

Requirements
Grandfather

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<thead>
<tr>
<th>Code</th>
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<tr>
<td>Core Courses</td>
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<td>Select one group from the following:</td>
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<tr>
<td>Group A:</td>
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<tr>
<td>BMS 500</td>
<td>Mammalian Physiology I</td>
<td></td>
</tr>
<tr>
<td>&amp; BMS 501</td>
<td>and Mammalian Physiology II</td>
<td></td>
</tr>
<tr>
<td>Group B:</td>
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<tr>
<td>BMS 500</td>
<td>Mammalian Physiology I</td>
<td></td>
</tr>
<tr>
<td>or BMS 501</td>
<td>Mammalian Physiology II</td>
<td></td>
</tr>
<tr>
<td>Select one from the following:</td>
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<tr>
<td>BMS 792A</td>
<td>Seminar: Biomedical Sciences</td>
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</tr>
<tr>
<td>BMS 792B</td>
<td>Seminar: Neurophysiology</td>
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<tr>
<td>BMS 792C</td>
<td>Seminar: Reproductive Physiology</td>
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<tr>
<td>GRAD 544</td>
<td>Ethical Conduct of Research</td>
<td>1</td>
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Selected Courses

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<tr>
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<tr>
<td>Select one from the following:</td>
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<tr>
<td>BMS 695A</td>
<td>Independent Study: Developmental Anatomy</td>
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<tr>
<td>BMS 695B</td>
<td>Independent Study: Microscopic Anatomy</td>
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</tr>
<tr>
<td>BMS 695C</td>
<td>Independent Study: Neuroanatomy</td>
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<tr>
<td>BMS 695D</td>
<td>Independent Study: Radiographic Anatomy</td>
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<tr>
<td>BMS 695E</td>
<td>Independent Study: Surgical Anatomy</td>
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Master of Science in Biomedical Sciences, Plan B, Coursework

Requirements

Grandfather

Human Anatomy Option

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<thead>
<tr>
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<tr>
<td>BMS 500</td>
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<td>BMS 501</td>
<td>Mammalian Physiology II</td>
<td>4</td>
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<tr>
<td>BMS 545</td>
<td>Neuroanatomy</td>
<td>5</td>
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<tr>
<td>BMS 575</td>
<td>Human Anatomy Dissection</td>
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<tr>
<td>BMS 610A</td>
<td>Managing a Career in Science: Survival Skills for Coursework (M.S.)</td>
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<tr>
<td>BMS 619</td>
<td>Advanced Human Gross Anatomy</td>
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Neurobiology Option

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<tr>
<td>BMS 500</td>
<td>Mammalian Physiology I</td>
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<tr>
<td>BMS 503/NB 503</td>
<td>Developmental Neurobiology</td>
<td>3</td>
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<tr>
<td>BMS 505/NB 505</td>
<td>Neuronal Circuits, Systems and Behavior</td>
<td>3</td>
</tr>
<tr>
<td>BMS 545</td>
<td>Neuroanatomy</td>
<td>5</td>
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<tr>
<td>BMS 610A</td>
<td>Managing a Career in Science: Survival Skills for Coursework (M.S.)</td>
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<td>Electives</td>
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Animal Anatomy Option

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BMS 500</td>
<td>Mammalian Physiology I</td>
<td>4</td>
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<tr>
<td>BMS 501</td>
<td>Mammalian Physiology II</td>
<td>4</td>
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<tr>
<td>BMS 531</td>
<td>Domestic Animal Dissection</td>
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<tr>
<td>BMS 545</td>
<td>Neuroanatomy</td>
<td>5</td>
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<td>BMS 610A</td>
<td>Managing a Career in Science: Survival Skills for Coursework (M.S.)</td>
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<td>BMS 633</td>
<td>Domestic Animal Anatomy-Case Discussions</td>
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Elective Courses

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<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
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<tr>
<td>BC 563</td>
<td>Molecular Genetics</td>
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<td>BC 565</td>
<td>Molecular Regulation of Cell Function</td>
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<td>BMS 420</td>
<td>Cardiopulmonary Physiology</td>
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<td>BMS 430</td>
<td>Endocrinology</td>
<td>3</td>
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<tr>
<td>BMS 631</td>
<td>Mechanisms of Hormone Action</td>
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<tr>
<td>BMS 632</td>
<td>Metabolic Endocrinology</td>
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<tr>
<td>BMS 640</td>
<td>Reproductive Physiology and Endocrinology</td>
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<td>BMS 684</td>
<td>Supervised College Teaching</td>
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<tr>
<td>MGT 450</td>
<td>Biomedical Entrepreneurship I</td>
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Master of Science in Biomedical Sciences, Plan B, Paper

Requirements

Grandfather

Core Courses

Select one group from the following: 4-8

- Group A: BMS 500 & BMS 501
- Group B: BMS 500 or BMS 501

Select one from the following: 2

- BMS 792A Seminar: Biomedical Sciences
- BMS 792B Seminar: Neurophysiology
- BMS 792C Seminar: Reproductive Physiology
- GRAD 544 Ethical Conduct of Research 1

Selected Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tr>
<td>BC 563</td>
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<tr>
<td>BC 565</td>
<td>Molecular Regulation of Cell Function</td>
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<td>BMS 503/</td>
<td>Developmental Neurobiology</td>
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<tr>
<td>NB 503</td>
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<td>BMS 505/</td>
<td>Neuronal Circuits, Systems and Behavior</td>
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<td>NB 505</td>
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<td>BMS 545</td>
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<td>BMS 631</td>
<td>Mechanisms of Hormone Action</td>
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<tr>
<td>BMS 640</td>
<td>Reproductive Physiology and Endocrinology</td>
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<tr>
<td>BMS 642</td>
<td>Research Techniques for Gametes and Embryos</td>
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</tr>
<tr>
<td>BMS 684</td>
<td>Supervised College Teaching</td>
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</table>

A minimum of 32 credits are required to complete this program.

1 Select courses with approval of advisor and graduate committee.

A minimum of 30 credits are required to complete this program.

Select enough credits with approval of advisor and graduate committee to bring the program total to a minimum of 30 credits.

1 Comprehensive exam required
A minimum of 30 credits are required to complete this program.

1. Select enough credits with approval of advisor and graduate committee to bring the program total to a minimum of 30 credits.

2. Students must write a scholarly paper.

### Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization

#### Requirements

**Effective Spring 2015**

<table>
<thead>
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<tbody>
<tr>
<td>BMS 695A</td>
<td>Independent Study: Developmental Anatomy</td>
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<td>BMS 695B</td>
<td>Independent Study: Microscopic Anatomy</td>
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<tr>
<td>BMS 695C</td>
<td>Independent Study: Neuroanatomy</td>
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<tr>
<td>BMS 695D</td>
<td>Independent Study: Radiographic Anatomy</td>
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<td>BMS 695E</td>
<td>Independent Study: Surgical Anatomy</td>
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<td>BMS 695F</td>
<td>Independent Study: Gross Anatomy</td>
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<td>STAT 511</td>
<td>Design and Data Analysis for Researchers I</td>
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**Scholarly Paper**

<table>
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<tr>
<th>Scholarly Paper</th>
<th>2</th>
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**Total Credits**

30

1. Students must take one credit of BMS 792C for two semesters.

2. Students must undertake an extensive laboratory project or internship working with oocyte culture IVF, embryo development, or cryopreservation.

3. Students must complete a scholarly paper detailing the research results from BMS 795E.

4. Select additional courses with advisor approval

5. No more than 7 credits at the 300- or 400-level will count toward the master's degree.

### Ph.D. in Biomedical Sciences

#### Requirements

**Grandfather**

<table>
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<th>Code</th>
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<tbody>
<tr>
<td>BMS 409</td>
<td>Human and Animal Reproductive Biology</td>
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<tr>
<td>BMS 642</td>
<td>Research Techniques for Gametes and Embryos</td>
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<tr>
<td>BMS 792C</td>
<td>Seminar: Reproductive Physiology</td>
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<tr>
<td>BMS 795E</td>
<td>Independent Study: Reproductive Physiology</td>
<td>3-4</td>
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**Selected Courses**

Select 20-21 credits from the following:

- ANEQ 510: Bovine Reproduction Management
- ANEQ 520
- BC 463: Molecular Genetics
- BC 465: Molecular Genetics
- BMS 430: Endocrinology
- BMS 500: Mammalian Physiology I
- BMS 501: Mammalian Physiology II
- BMS 521: Comparative Reproductive Physiology
- BMS 631: Mechanisms of Hormone Action
- BMS 632: Metabolic Endocrinology
- BMS 640: Reproductive Physiology and Endocrinology
- BZ 455: Human Heredity and Birth Defects
- CM 666: Science and Ethics
- PHIL 666
- FW 465: Managing Human-Wildlife Conflicts
- FW 469: Conservation and Management of Large Mammals
- FW 555: Conservation Biology
- STAT 511: Design and Data Analysis for Researchers I

**VS 626** | Infertility and Genital Disease |

**Scholarly Paper**

| Scholarly Paper | 3 |

**Total Credits**

29-33

A minimum of 30 credits are required to complete this program.

1. Select enough credits with approval of advisor and graduate committee to bring the program total to a minimum of 30 credits.

2. Students must write a scholarly paper.

3. Students must complete a scholarly paper detailing the research results from BMS 795E.

4. Select additional courses with advisor approval

5. No more than 7 credits at the 300- or 400-level will count toward the master's degree.
or BMS 796C Group Study: Reproductive Physiology

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GRAD 544</td>
<td>Ethical Conduct of Research</td>
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**Selected Courses**

<table>
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<tr>
<th>Course</th>
<th>Title</th>
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<tr>
<td>BMS 503/ NB 503</td>
<td>Developmental Neurobiology</td>
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<td>BMS 505/ NB 505</td>
<td>Neuronal Circuits, Systems and Behavior</td>
</tr>
<tr>
<td>BMS 545</td>
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<td>BMS 631</td>
<td>Mechanisms of Hormone Action</td>
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<tr>
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<td>Metabolic Endocrinology</td>
</tr>
<tr>
<td>BMS 640</td>
<td>Reproductive Physiology and Endocrinology</td>
</tr>
<tr>
<td>BMS 642</td>
<td>Research Techniques for Gametes and Embryos</td>
</tr>
<tr>
<td>BMS 795A</td>
<td>Independent Study: Endocrinology</td>
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<tr>
<td>BMS 795B</td>
<td>Independent Study: Neuropsychology</td>
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<td>BMS 795C</td>
<td>Independent Study: Cell Physiology</td>
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<td>BMS 795D</td>
<td>Independent Study: Cardiopulmonary Physiology</td>
</tr>
<tr>
<td>BMS 795E</td>
<td>Independent Study: Reproductive Physiology</td>
</tr>
<tr>
<td>BMS 796A</td>
<td>Group Study: Topics in Neuroscience</td>
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<tr>
<td>BMS 796B</td>
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<td>Group Study: Reproductive Physiology</td>
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<td>NB 502</td>
<td>Techniques in Molecular &amp; Cellular Biology</td>
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<tr>
<td>NB 771</td>
<td>Writing, Submitting, and Reviewing Grants</td>
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<td>NB 793</td>
<td>Neuroscience Seminar</td>
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<td>NB 796A</td>
<td>Group Study: Ion Channels</td>
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<tr>
<td>NB 796B</td>
<td>Group Study: Neuronal Growth and Regeneration</td>
</tr>
<tr>
<td>NB 796C</td>
<td>Group Study: Topics in Neuroscience</td>
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<tr>
<td>NB 796D</td>
<td>Group Study: Seizures and Epilepsy</td>
</tr>
<tr>
<td>NB 796E</td>
<td>Group Study: Neuroendocrine Mechanisms</td>
</tr>
<tr>
<td>STAT 511</td>
<td>Design and Data Analysis for Researchers I</td>
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<tr>
<td>STAT 512</td>
<td>Design and Data Analysis for Researchers II</td>
</tr>
</tbody>
</table>

**Dissertation**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS 799</td>
<td>Dissertation</td>
<td>Var</td>
</tr>
</tbody>
</table>

**Total Credits** 72

A minimum of 72 credits are required to complete this program.

1 Select courses with approval of advisor and graduate committee.
Ph.D.

- Ph.D. in Clinical Sciences*

* Please see department for program of study.

Courses

Clinical Sciences (VS)

VS 313  Prevention and Control of Livestock Diseases  Credits: 3 (3-0-0)
Also Offered As: ANEQ 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 313 and ANEQ 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 331  Histology  Credits: 4 (3-2-0)
Course Description: Analysis of animal cells, tissues, and organs emphasizing light microscopy.
Prerequisite: BMS 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 331 and BMS 330. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 333  Domestic Animal Anatomy  Credits: 4 (3-3-0)
Course Description: Comparative functional anatomy of the dog, horse, and cow.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 333 and BMS 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 479  Biology and Behavior of Dogs  Credits: 3 (3-0-0)
Also Offered As: BZ 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: LIFE 103 or BZ 110.
Registration Information: Credit not allowed for both VS 479 and BZ 479. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 533  Epidemiology of Infectious Diseases/Zoonoses  Credits: 3 (2-0-1)
Also Offered As: MIP 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both VS 533 and MIP 533.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 562  Applied Data Analysis  Credits: 3 (3-0-0)
Course Description: Data management, application and interpretation of statistical analysis, and reporting of results for students in health science fields.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 570  Issues in Animal Agriculture  Credits: 2 (2-0-0)
Also Offered As: AGRI 570.
Course Description: Issues that have a major impact on the direction of changes in animal agriculture.
Prerequisite: None.
Registration Information: Credit not allowed for both VS 570 and AGRI 570.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 579  Animal Behavior in Captive Populations  Credits: 3 (3-0-0)
Also Offered As: NSCI 579.
Course Description: How animals learn, perceive their world and behave, and how all of those intersect to alter behavior in captive settings.
Prerequisite: BZ 300.
Registration Information: Enrollment in the M.P.N.S., Zoo, Aquarium, and Shelter Management specialization can substitute for BZ 300. Credit not allowed for both VS 579 and NSCI 579.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 602  Critical Evaluation of Scientific Literature  Credits: 2 (1-0-1)
Course Description: Method of evaluating scientific literature. Students present critiques of papers they have chosen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Credit not allowed for both VS 602 and MIP 602.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

VS 605  Comparative Anesthesiology  Credits: 2 (2-0-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.
VS 606 Comparative Anesthesiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in VS 605.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 612 Plastic and Reconstructive Surgery Credits: 2 (2-0-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 613 Plastic and Reconstructive Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 626 Infertility and Genital Disease Credits: 2 (2-0-0)
Course Description: Infectious and noninfectious causes of reproductive failure in food animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 628 Physiology and Pathophysiology Credits: 3 (3-0-0)
Course Description: Overview of the normal physiology and pathophysiology of disease states of mammalian organ systems.
Prerequisite: BMS 500 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in VS 628.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 630 Orthopedic Surgery Credits: 3 (3-0-0)
Course Description: Techniques, devices, and prosthetic materials in rehabilitating musculoskeletal problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 631 Orthopedic Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Procedures applied to skeletal preparations and living animals.
Prerequisite: (VM 786A or VM 786B) and (VS 630, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 642 Ophthalmology Credits: 5 (4-2-0)
Course Description: Instrumentation, ocular therapeutics, and clinical ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 644 Principles of Theriogenology Credits: 2 (2-0-0)
Course Description: Provide basic and practical understanding of reproduction in domestic species. Including the anatomy and physiology of males and females, gamete development, fertilization, embryonic development, parturition and early neonatal care; focusing on domestic animals. In addition to basic normal physiology, characteristic disease states and potential treatments will be discussed, as well as methods for improving reproductive capabilities, such as artificial insemination and embryo transfer.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 645 Surgery of the Eye Credits: 3 (2-3-0)
Course Description: Techniques, indications, and complications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 648 Food Animal Production and Food Safety Credits: 2 (2-0-0)
Also Offered As: VM 648.
Course Description: Basic orientation to food animal production units, herd health concepts, and issues of food safety from preharvest through processing and distribution.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in Food Science/Safety Graduate Interdisciplinary Studies program required. Credit not allowed for both VS 648 and VM 648.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
VS 650 Comparative Abdominal Surgery Credits: 3 (3-0-0)
Course Description: New techniques in surgery of abdominal viscera.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 651 Comparative Abdominal Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Reparative and reconstructive abdominal surgical procedures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 655 Echocardiography in Veterinary Medicine Credits: 3 (2-3-0)
Course Description: Technical proficiency in obtaining echocardiographic images; fundamental understanding of diagnostic criteria for common cardiac disease in dogs and cats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required. Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 660 Neurology and Neurosurgery Credits: 3 (3-0-0)
Course Description: Diagnostic and surgical techniques for the nervous system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 661 Neurology and Neurosurgery Laboratory Credit: 1 (0-3-0)
Course Description: Production and correction of surgically amenable lesions in central and peripheral nervous system; electrodiagnosis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 673 Thoracic and Cardiovascular Surgery Credits: 3 (3-0-0)
Course Description: Surgical approaches to the thorax and the central and peripheral cardiovascular system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 674 Thoracic and Cardiovascular Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Surgical procedures applied to the chest, heart, and vessels.
Prerequisite: (VM 786A or VM 786B) and (VS 673, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 701 Postgraduate Medicine I Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of immunology, emergency medicine, dermatology, and endocrinology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 702 Postgraduate Medicine II Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of neurology, gastroenterology, and ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 703 Postgraduate Medicine III Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of oncology, cardiology, reproduction, ophthalmology, and radiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 704 Postgraduate Medicine IV Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of hematology, nephrology, urology, respiratory, hepatic, and pancreatic.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 716 Advanced Studies in Reproduction Credits: 2 (2-0-0)
Course Description: Biochemical and physiological basis for problems in reproduction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
VS 718 Cancer Biology Clinical Practicum Credits: 2 (0-0-4)
Course Description: Exposes graduate students engaged in laboratory cancer research to cancer from a clinical perspective, through VTH clinical rotations.
Prerequisite: ERHS 510.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 733 Advanced Veterinary Epidemiology Credits: 4 (4-0-0)
Course Description: Advanced epidemiological and statistical techniques for the design and analysis of research projects.
Prerequisite: (ERHS 532) and (ERHS 542 or ERHS 544 or STAT 511 or STAT 512 or VS 662).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 750 Clinical and Applied Pharmacology Credits: 2 (2-0-0)
Course Description: Factors involved in drug dosing and variability of drug response. Applications in veterinary and human medicine.
Prerequisite: BMS 450.
Registration Information: DVM degree or equivalent professional medicine degree can substitute for BMS 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 760 Methods in Orthopaedic Research Credits: 3 (2-0-1)
Course Description: Methods utilized in orthopaedic research will be presented by reviewing basic principles followed by examples of use in research projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 792 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795A Independent Study: Small Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795B Independent Study: Large Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795C Independent Study: Small Animal Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795D Independent Study: Equine Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795G Independent Study: Equine Orthopedics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795H Independent Study: Large Animal Reproduction Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795I Independent Study: Anesthesiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795J Independent Study: Anesthesiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
VS 795J  Independent Study: Cardiology  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795K  Independent Study: Neurology  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795L  Independent Study: Dermatology  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795N  Independent Study: Ophthalmology  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795O  Independent Study: Herd Health Management  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795P  Independent Study: Equine Lameness  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795S  Independent Study: Epidemiology  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795T  Independent Study: Human-Animal Bond  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 796  Group Study-Medicine  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 798  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Master of Science in Clinical Sciences
Requirements
Effective Fall 2006
First Year
Approved electives\(^1\) 9

Total Credits 10

Second Year
Approved electives\(^1\) 9

Total Credits 10

Third Year
Approved electives\(^1\) 9

Total Credits 10

Program Total Credits: 30

A minimum of 30 credits are required to complete this program.

\(^1\) Chosen from courses relevant to the student’s residency program. At least 24 credit hours must be in regular course work. Regular course work is defined as courses other than independent or group studies, thesis/dissertation credits, supervised college teaching, unique title courses offered through the Division of Continuing Education and any courses graded pass/fail. At least 16 of the credit hours earned at CSU must be in 500-level or higher courses, and at least 12 of those 16 must be regular course work.
Department of Environmental and Radiological Health Sciences

Undergraduate

Majors
• Major in Environmental Health

Minors
• Minor in Environmental Health

Graduate

Graduate Programs in Environmental and Radiological Health Sciences

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Environmental Health and Radiological Health Sciences. Areas of emphasis in environmental health include epidemiology, occupational health, industrial hygiene, ergonomics, and environmental toxicology. Areas of emphasis in Radiological Health include cancer biology, cellular and molecular radio-biology, radiation oncology, radiation protection/health physics, radiochemistry, radioecology, and veterinary radiology. Students interested in graduate work should refer to the Academic Policies, Guidelines and Requirements for Graduate Students (http://csu-cvmbs.colostate.edu/Documents/erhs-graduate-student-handbook.pdf) and the Department of Environmental and Radiological Health Sciences (http://www.cvmbs.colostate.edu/erhs).

Master Programs

• Master of Science in Environmental Health, Plan B, Environmental Health and Safety Specialization
• Master of Science in Environmental Health, Plan A, Epidemiology Specialization
• Master of Science in Environmental Health, Plan B, Epidemiology Specialization
• Master of Science in Environmental Health, Ergonomics Specialization
• Master of Science in Environmental Health, Industrial Hygiene Specialization, Plan A
• Master of Science in Environmental Health, Industrial Hygiene Specialization, Plan B
• Master of Science in Environmental Health, Plan A, Toxicology Specialization (No new students are being accepted into this specialization.)
• Master of Science in Environmental Health, Plan B, Toxicology Specialization (No new students are being accepted into this specialization.)
• Master of Science in Radiological Health Sciences, Plan A, Health Physics Specialization
• Master of Science in Radiological Health Sciences, Plan B, Health Physics Specialization
• Master of Science in Toxicology, Plan A
• Master of Science in Toxicology, Plan B

Ph.D.

• Ph.D. in Environmental Health, Epidemiology Specialization
• Ph.D. in Environmental Health, Ergonomics Specialization
• Ph.D. in Environmental Health, Industrial Hygiene Specialization
• Ph.D. in Environmental Health, Toxicology Specialization (No new students are being accepted into this specialization.)
• Ph.D. in Radiological Health Sciences*
• Ph.D. in Toxicology

* Please see department for program of study.
Courses

Environmental and Radiological Health Services (ERHS)

ERHS 174 Freshman Scholar Credit: 1 (1-0-0)
Course Description: Scholarship-supported exploration of biomedical research theory and practice.
Prerequisite: None.
Registration Information: Admission to CVMBS Freshman Scholar’s Program required. Up to 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 192 Environmental Health First Year Seminar Credit: 1 (1-0-0)
Course Description: Introduction to biosciences, college life, learning skills, problem solving, and degree planning.
Prerequisite: None.
Registration Information: Freshman standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 210 Cancer Biology, Medicine, and Society Credits: 2 (2-0-0)
Course Description: A broad overview of cancer biology and cancer medicine.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 220 Environmental Health Credits: 2 (2-0-0)
Course Description: Impact of people on the physical and biological environment as well as impact of the environment on people; emphasis placed on human health.
Prerequisite: BZ 101, may be taken concurrently or BZ 110, may be taken concurrently or BZ 120, may be taken concurrently or LIFE 102, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 230 Environmental Health Field Methods Credits: 3 (0-6-0)
Course Description: Field and laboratory techniques necessary for practice of environmental health.
Prerequisite: CHEM 113 with a minimum grade of C and CHEM 114 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 320 Environmental Health - Water and Food Safety Credits: 3 (3-0-0)
Course Description: Water quality and food safety for practice of environmental health.
Prerequisite: MIP 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 332 Principles of Epidemiology Credits: 3 (3-0-0)
Course Description: Use of epidemiological methods in studying distribution of diseases in human populations.
Prerequisite: (STAT 301, may be taken concurrently or STAT 307, may be taken concurrently) and (MIP 300, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 350 Industrial Hygiene and Air Credits: 3 (3-0-0)
Course Description: Industrial and airborne hazards, disease prevention, hazard control and evaluation.
Prerequisite: (BMS 300 and ERHS 230 and PH 122) and (CHEM 341, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 400 Radiation Safety Credits: 3 (3-0-0)
Course Description: Radiation physics, dosimetry, radiation measurement, emergencies and waste management. Essentials of radiation safety.
Prerequisite: CHEM 112 and ERHS 300 and PH 122.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 405 Fundamentals of Ergonomics Credits: 2 (2-0-0)
Course Description: Basic skills, knowledge, and abilities in ergonomics; focus on musculoskeletal injury prevention.
Prerequisite: None.
Registration Information: One college-level animal biology or anatomy/physiology or engineering design course or concurrent registration. Offered as an online course only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 410 Environmental Health and Waste Management Credits: 3 (3-0-0)
Course Description: Recognition of impacts, occupational and environmental, in handling wastes; administrative management for waste programs.
Prerequisite: (CHEM 245, may be taken concurrently or CHEM 343, may be taken concurrently or CHEM 346, may be taken concurrently) and (ERHS 230).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 430 Human Disease and the Environment Credits: 3 (3-0-0)
Course Description: Overview of the human diseases which are associated with the environment.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 446  Environmental Toxicology  Credits: 3 (3-0-0)
Course Description: Essentials of environmental toxicology based on problem-oriented discussions addressing environmental impacts of organic/inorganic chemicals.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 448  Environmental Contaminants: Exposure and Fate  Credits: 3 (3-0-0)
Course Description: Pathways of exposure and behavior of environmental contaminants. Exposure assessment in environmental health protection.
Prerequisite: (CHEM 245 or CHEM 341 or CHEM 345) and (LIFE 102).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 450  Introduction to Radiation Biology  Credits: 3 (3-0-0)
Course Description: Genetic and somatic effects of radiation on cells, tissues, and the whole organism; tumor therapy; carcinogenesis; risks vs. benefits of radiation.
Prerequisite: LIFE 102 and PH 122, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 479  Environmental Health Practice  Credit: 1 (0-0-1)
Course Description: Networking, preparation of resume and statement of qualifications for professional internship or employment.
Prerequisite: ERHS 230, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 487  Internship-Environmental Health  Credits: Var[4-7] (0-0-0)
Course Description: Professional field practice in environmental health with a public or private sector agency.
Prerequisite: ERHS 479.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 494  Independent Study in Environmental Health  Credits: Var[1-18] (0-0-0)
Course Description: Directed independent study or project under faculty guidance.
Prerequisite: ERHS 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 498  Research  Credits: Var[1-4] (0-0-0)
Course Description: Research in environmental and radiological health sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 502  Fundamentals of Toxicology  Credits: 3 (3-0-0)
Course Description: Fundamental principles of toxicology; dose-response, organ targets, toxic agents.
Prerequisite: (BMS 300 or BMS 360) and (CHEM 245 or CHEM 341 or CHEM 345).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 503  Toxicology Principles  Credit: 1 (1-0-0)
Course Description: Principles of toxicology for applications in industrial hygiene and environmental public health.
Prerequisite: CHEM 113 and LIFE 102.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 504  Occupational and Environmental Toxicology  Credits: 2 (2-0-0)
Course Description: Toxic effects of harmful agents found in occupational and environmental settings.
Prerequisite: ERHS 446 or ERHS 502 or ERHS 503, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 505  Epidemiologic Research  Credit: 1 (1-0-0)
Course Description: Professional skills and knowledge regarding topics in the epidemiologic research process.
Prerequisite: ERHS 532, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 507A  Toxicology Toolbox: Fundamentals  Credit: 1 (1-0-0)
Course Description: Qualitative description of toxicant molecules relevant to their behavior in biological systems and the environment. Quantitative characterization of toxicant concentrations (dose) and how they change with time (toxicokinetics).
Prerequisite: ERHS 446, may be taken concurrently or ERHS 448, may be taken concurrently or ERHS 502, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 510  Cancer Biology  Credits: 3 (3-0-0)
Course Description: Cancer biology, from epidemiology and classification, through the molecular basis of the phenotypes to detection and treatment.
Prerequisite: BC 351 or BC 403, may be taken concurrently or BZ 310 or CM 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 515  Non-Ionizing Radiation Safety  Credits: 2 (2-0-0)
Course Description: Evaluation and safe use of non-ionizing radiation sources. Calculation of safe distances for exposure and maximum permissible exposures.
Prerequisite: (CHEM 107 or CHEM 113) and (MATH 118) and (PH 122 or PH 142).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 520  Environmental and Occupational Health Issues  Credits: 3 (3-0-0)
Course Description: Issues in environmental and occupational health sciences in the context of public health and regulatory concerns.
Prerequisite: ERHS 526 or LIFE 102.
Registration Information: Admission to the Master of Public Health program can be substituted for LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 526  Industrial Hygiene  Credits: 3 (3-0-0)
Course Description: Theory and application of industrial hygiene principles to management of the occupational environment.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345 and (ERHS 520, may be taken concurrently) and (PH 110 or PH 121).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 527  Industrial Hygiene Laboratory  Credit: 1 (0-3-0)
Course Description: Industrial hygiene field monitoring equipment and techniques.
Prerequisite: ERHS 526, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 528  Occupational Safety  Credits: 3 (3-0-0)
Course Description: Introduction to occupational safety hazard recognition and control.
Prerequisite: ERHS 350.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 530  Radiological Physics and Dosimetry I  Credits: 3 (3-0-0)
Course Description: Theory and detection of ionizing radiation; measurement and calculation of exposure and dose.
Prerequisite: (MATH 155 or MATH 160) and (PH 122).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 532  Epidemiologic Methods  Credits: 3 (2-0-1)
Course Description: Method of epidemiologic investigation and study design. Applications to disease control with literature examples.
Prerequisite: ERHS 307 or STAT 307.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 534  SAS and Epidemiologic Data Management  Credits: 3 (3-0-0)
Course Description: Basic concepts and skills necessary for data management and analyses using SAS programming in epidemiology studies.
Prerequisite: None.
Registration Information: Graduate standing in Environmental Health.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 535  R Programming for Research  Credits: 3 (2-2-0)
Course Description: In-depth instruction on data collection, data management, programming, and visualization, using data examples relevant to academic research. Taught using the statistical programming language R, but the principles will be translatable to other programming languages (e.g., Python, Matlab, SAS). Conducting reproducible research in R and how to construct custom functions and bundle these in a shareable R package.
Prerequisite: None.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 536  Advanced Occupational Health  Credits: 3 (3-0-0)
Course Description: Advanced topics in occupational health emphasizing contemporary issues, topics, trends, and problems in the field of industrial hygiene.
Prerequisite: ERHS 446 or ERHS 526.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 538  Geographic Information Systems and Health  Credits: 3 (1-3-1)
Course Description: Applications of geographic information systems (GIS) in public health. Topics include geographic theory, spatial data, cartography, data visualization, spatial analysis, geocoding, primary and secondary data acquisition, and application of GIS for epidemiologic analyses.
Prerequisite: ERHS 532.
Registration Information: Must register for lecture, lab, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 540  Principles of Ergonomics  Credits: 3 (3-0-0)
Course Description: Theory and practice of ergonomics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 541 Ergonomics in Product and Process Design Credits: 3 (3-0-0)
Course Description: Application of ergonomics to design of products and processes with respect to health, safety, function, and quality.
Prerequisite: ERHS 540.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 542 Biostatistical Methods for Qualitative Data Credits: 3 (3-0-0)
Also Offered As: STAT 544.
Course Description: Statistical analysis of categorical data as obtained in epidemiology, toxicology, occupational health, and clinical sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 543 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: STAT 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Registration Information: Credit not allowed for both ERHS 543 and STAT 544.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 544 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Registration Information: Credit not allowed for both ERHS 544 and STAT 544.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 545 Environmental Exposure Assessment Credits: 2 (2-0-0)
Course Description: Approaches and techniques for quantitative characterization of environmental exposure to harmful agents via inhalation, ingestion, and dermal pathways.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 547 Equipment and Instrumentation Credits: 3 (0-6-0)
Course Description: Sample collection, quality control, theory and application of equipment and instrumentation for analysis and confirmation of organic-inorganic chemicals.
Prerequisite: ERHS 446 or ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 549 Environmental Health Risk Assessment Credits: 3 (3-0-0)
Course Description: Environmental contamination and health effects of chemicals using risk assessment, management and communication approaches.
Prerequisite: ERHS 332 or ERHS 446 or ERHS 502 or ERHS 503 or ERHS 532.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 550 Principles of Radiation Biology Credits: 5 (5-0-0)
Course Description: Dose-response relationships; physical, chemical, and biological modification of radiation damage; radiation oncology; radiation genetics and oncogenesis.
Prerequisite: (BZ 310) and (ERHS 300 or ERHS 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551A Radiation Biology Principles for Medicine: Principles of Radiation Biology Credits: 2 (2-0-0)
Course Description: Biological responses to radiation exposure; DNA damage and repair, cell killing and survival, carcinogenesis and genetic effects.
Prerequisite: BZ 310.
Registration Information: Credit not allowed for both ERHS 551A and ERHS 550. Offered only online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551B Radiation Biology Principles for Medicine: Principles of Radiation Oncology Credits: 2 (2-0-0)
Course Description: Application of basic radiation biology to the clinical application of radiation therapy. Radiation sensitivity and tolerance is evaluated based on normal tissue architecture and kinetics. The mechanisms of acute and late radiation effects are elucidated. The impact of time, dose, and fractionation on tumor control and radiation effects are clarified and related to established and newer treatment modalities, including combination therapies and emerging technologies.
Prerequisite: ERHS 551A.
Registration Information: Credit not allowed for both ERHS 551B and ERHS 550. Offered only online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551C Radiation Biology Principles for Medicine: Principles of Radiation Protection Credit: 1 (1-0-0)
Course Description: Radiation risk assessment and protection; risk versus benefit associated with environmental and medical exposures.
Prerequisite: ERHS 551B.
Registration Information: Credit not allowed for both ERHS 551C and ERHS 550. Offered only online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 555 Quantitative Methods for Radiation Safety Credits: 3 (3-0-0)
Course Description: Analytical methods used in health physics, radioecology and radiochemistry. Quantification of uncertainty in radioactive samples and dosimetry.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 556 Monte Carlo Methods in Health Physics Credits: 3 (3-0-0)
Course Description: Monte Carlo methods for the assessment of complex systems or macroscopic quantities on basis of statistical nature of microscopic components.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Eligibility for access to government software.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 561 Radiation Public Health  Credits: 2 (2-0-0)
Course Description: Aspects of radiation public health for students in health physics with emphasis on contemporary issues in radiation protection.
Prerequisite: ERHS 530 and ERHS 550, may be taken concurrently or ERHS 300 and ERHS 400.
Registration Information: ERHS 400 with written consent of instructor or ERHS 530.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 563 Environmental Contaminant Modeling I  Credits: 2 (2-0-0)
Course Description: Mathematical modeling of radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: MATH 155.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 565 Chemical and Biological Warfare Agents  Credits: 2 (2-0-0)
Course Description: Current understanding of chemical and biological agents used in asymmetric warfare.
Prerequisite: CHEM 245 or CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 566 Forensic Toxicology  Credits: 3 (2-2-0)
Course Description: Toxic effects of commonly encountered abused substances and laboratory methods to identify and measure these.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 567 Cell and Molecular Toxicology Techniques  Credits: 3 (0-6-0)
Course Description: Hands-on techniques exposure to molecular toxicology.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 568 Pharmaceutical and Regulatory Toxicology  Credits: 3 (3-0-0)
Course Description: Toxicology as applied in public (regulatory) and private (pharmaceutical, industrial) sectors.
Prerequisite: ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 569 Immunotoxicology  Credits: 3 (2-0-1)
Course Description: Must register for lecture and recitation.
Prerequisite: ERHS 446 and MIP 342 or ERHS 502 or ERHS 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 570 Radioecology  Credits: 2 (2-0-0)
Course Description: Environmental transport and exposure assessment of radioactive and other contaminants; estimating risk for human health and ecological impacts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 595B Independent Study: Large Animal Radiology  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595D Independent Study: Radiation Therapy  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595E Independent Study: Radiation Physics  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595F Independent Study: Dosimetry  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595G Independent Study: Radiation Chemistry  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595H Independent Study: Radiation Biology  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595I Independent Study: Radiological Health  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 595J  Independent Study: Radiation Ecology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595K  Independent Study: Microcomputer Analysis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 596C  Group Study: Toxicology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 601  Metabolism and Disposition of Toxic Agents  Credits: 3 (3-0-0)
Course Description: Metabolism of toxic agents and effects on their fate in the body. Covalent and non-covalent interactions with cellular targets.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 602  Toxicological Mechanisms  Credits: 3 (3-0-0)
Course Description: Role of cellular information systems in toxic mechanisms: DNA expression, signal transduction and control of cellular processes.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 603  Toxicological Pathology  Credits: 3 (3-0-0)
Course Description: Toxicological study of pharmacologic, chemical and environmental agents and resulting morphologic and cellular changes.
Prerequisite: BMS 300 or BMS 360.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 611  Cancer Genetics  Credits: 2 (2-0-0)
Course Description: Role of genetic background in determining individual susceptibility to cancer.
Prerequisite: BZ 350 or MIP 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 630  Radiological Physics and Dosimetry II  Credits: 3 (3-0-0)
Course Description: Calculations and measurement techniques for dosimetry shielding and protection from ionizing radiations.
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 632  Techniques in Radiation Dosimetry  Credit: 1 (0-3-0)
Course Description: Techniques for determining the absorbed dose in tissue from ionizing radiations.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 633  Radiation Detection Methods in Radiobiology  Credit: 1 (0-3-0)
Course Description: Detection and measurement of ionizing radiation appropriate for radiobiologists.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 636  Industrial Hygiene Control Methods  Credits: 3 (3-0-0)
Course Description: Controlling occupational exposures to chemical agents, emphasizing local exhaust ventilation; personal protective devices.
Prerequisite: ERHS 526 and ERHS 536, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 637  Environment, Safety, and Health Management  Credits: 3 (3-0-0)
Course Description: Environment, safety, and health management systems for occupational health practitioners; major environmental and DOT regulatory standards and laws.
Prerequisite: ERHS 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 640  Advanced Epidemiology  Credits: 3 (3-0-0)
Course Description: In-depth exploration of advanced epidemiologic methods.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 642 Applied Logistic Regression Credits: 3 (3-0-0)  
**Course Description:** Basic and advanced concepts of logistic regression with focus on practical applications in epidemiology using SAS.  
**Prerequisite:** ERHS 532 and ERHS 542.  
**Restriction:** Must be a Graduate, Professional.  
**Term Offered:** Spring (even years).  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

ERHS 656 Occupational Noise Control Credits: 3 (3-0-0)  
**Course Description:** Measurement and control of industrial or environmental noise emphasizing practical solutions.  
**Prerequisite:** ERHS 527.  
**Restriction:** Must be a Graduate, Professional.  
**Term Offered:** Fall (even years).  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

ERHS 658 Environmental/Occupational Epidemiology Credits: 3 (2-0-1)  
**Course Description:** Epidemiologic analyses of effects of exposure to environmental and occupational health hazards.  
**Prerequisite:** ERHS 532.  
**Restriction:** Must be a Graduate, Professional.  
**Registration Information:** Must register for lecture and recitation.  
**Term Offered:** Spring (odd years).  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

ERHS 665 Radiochemistry Credits: 3 (2-3-0)  
**Course Description:** Radionuclide separation and measurement and radiotracer applications in physical and biological systems.  
**Prerequisite:** (CHEM 114 and MATH 155) and (ERHS 530, may be taken concurrently).  
**Restriction:** Must be a Graduate, Professional.  
**Registration Information:** Must register for lecture and laboratory.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

ERHS 670 Directed Readings Credits: Var[1-3] (0-0-0)  
**Course Description:** Advanced study through supervised readings on specialized topics.  
**Prerequisite:** ERHS 520.  
**Restriction:** Must be a Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 671 Experimental Radioecology Credit: 1 (0-3-0)  
**Course Description:** Experimental techniques used in radioecological and environmental radioactivity studies.  
**Prerequisite:** (ERHS 400 or ERHS 532) and (ERHS 570).  
**Restriction:** Must be a Graduate, Professional.  
**Term Offered:** Spring.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  

ERHS 675 Environmental Health Regulatory Compliance Credits: 3 (3-0-0)  
**Course Description:** Requirements and strategies for meeting obligations under regulations and laws involved in environmental and occupational health protection.  
**Prerequisite:** None.  
**Registration Information:** 15 credits of ERHS courses 500-level or above or written consent of instructor.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

ERHS 679 Occ Env Health Interdisciplinary Symposium Credits: 2 (0-0-2)  
**Course Description:** Evaluation of occupational and environmental health issues, through multidisciplinary interactions in seminars and field visits.  
**Prerequisite:** None.  
**Restriction:** Must be a Graduate, Professional.  
**Registration Information:** Enrollment in a graduate program related to occupational, environmental, or public health. May be repeated for credit.  
**Term Offered:** Fall.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  

ERHS 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)  
**Course Description:** Participation in environmental health course teachings under guidance of faculty in classroom, laboratory, or field.  
**Prerequisite:** None.  
**Restriction:** Must be a Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 687 Internship Credits: Var[1-6] (0-0-0)  
**Course Description:** Advanced study or research in environmental health with a governmental agency, private sector entity, or research facility.  
**Prerequisite:** None.  
**Restriction:** Must be a Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 692 Seminar Credit: 1 (0-0-1)  
**Course Description:** Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.  
**Prerequisite:** None.  
**Restriction:** Must be a Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 693A Research Seminar: Epidemiology Credit: 1 (0-0-1)  
**Course Description:** Presentation of student research and discussion of publications from scientific literature.  
**Prerequisite:** None.  
**Restriction:** Must be a Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.
ERHS 693B Research Seminar: Industrial Hygiene Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693C Research Seminar: Toxicology Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693D Research Seminar: Health Physics Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 695A Independent Study: Epidemiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in epidemiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695B Independent Study: Occupational and Environmental Health Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in occupational and environmental health under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695C Independent Study: Toxicology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in toxicology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695D Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation chemistry under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695E Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation ecology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695F Independent Study: Cancer Biology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in cancer biology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695G Independent Study: Health Physics Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in health physics under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695H Independent Study: Exposure Assessment Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in exposure assessment under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695I Independent Study: Small Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in small animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695J Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in large animal radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 695K Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in special techniques in radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695L Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation therapy under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695M Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in computed tomography under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695N Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in magnetic resonance imaging under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695O Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in ultrasound under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695P Independent Study: Nuclear Medicine Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in nuclear medicine under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695Q Independent Study: Special Techniques in Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in special techniques in radiation therapy under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695R Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in computed tomography under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695S Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in magnetic resonance imaging under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695T Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in ultrasound under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695U Independent Study: Nuclear Medicine Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in nuclear medicine under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695V Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in special techniques in radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695W Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation therapy under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695X Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in computed tomography under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695Y Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in magnetic resonance imaging under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695Z Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in ultrasound under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696A Group Study: Epidemiology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696B Group Study: Industrial Hygiene Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696C Group Study: Toxicology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696D Group Study: Health Physics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of research mentor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 701 Advanced Diagnostic Imaging Modalities Credits: 4 (4-0-0)
Course Description: Interpretation/applications of advanced imaging methods including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 711 Advanced Radiographic Interpretation Credits: Var[1-4] (0-0-0)
Course Description: Radiographic interpretation of disease processes of all major systems in large and small animals.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 712 Physics of Diagnostic Imaging Credits: 3 (3-0-0)
Course Description: Physics of imaging for radiology, ultrasound, computerized tomography, magnetic resonance, and nuclear medicine.
Prerequisite: None.
Registration Information: DVM or equivalent professional veterinary medicine degree required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 714 Radiation Therapy Physics Credits: 3 (3-0-0)
Course Description: Radiation therapy physics, photon and electron production for therapeutic use, teletherapy, brachytherapy, radiation protection and quality assurance.
Prerequisite: None.
Registration Information: DVM or health physics, physics, or engineering graduate student.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 721 Radiation Oncology Credits: Var[1-3] (0-0-0)
Course Description: Management of spontaneous and experimental tumors with emphasis on radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 726 Aerosols and Environmental Health Credits: 3 (3-0-0)
Course Description: Properties and behavior of environmental and occupational aerosols emphasizing how airborne particles affect health of humans and the environment.
Prerequisite: PH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 733 Environmental Carcinogenesis Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms by which environmental carcinogens exert effects.
Prerequisite: BC 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 751 Advanced Radiation Biology I Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms of radiation damage and repair; mammalian radiation genetics.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 753 Advanced Radiation Biology II Credits: 3 (3-0-0)
Course Description: Perturbations in cell cycle and cell population growth kinetics by radiation; radiation effects on normal tissues; radiation oncogenesis.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 755 Environmental Contaminant Modeling II Credit: 1 (0-3-0)
Course Description: Development and analysis of advanced computer models for radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: ERHS 563 and ERHS 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 770 Radiation Biology Basic to Tumor Therapy Credit: 1 (0-0-1)
Course Description: Current aspects of radiation biology pertinent to improvements in radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 787 Internship Credits: Var[1-6] (0-0-0)
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 792 Seminar: Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 793 Seminar: Credit: 1 (0-0-1)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795A Independent Study: Epidemiology: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795B Independent Study: Occupational and Environmental Health: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795C Independent Study: Toxicology: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795D Independent Study: Radiation Chemistry: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795E Independent Study: Radiation Ecology: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795F Independent Study: Cancer Biology: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795G Independent Study: Health Physics: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795H Independent Study: Exposure Assessment: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795I Independent Study: Small Animal Radiology: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795J Independent Study: Large Animal Radiology: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795K Independent Study: Special Techniques in Radiology: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795L Independent Study: Radiation Therapy: Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Environmental Health

An Environmental Health degree prepares students for the branch of public health that studies how biological, chemical, and physical factors in natural and built environments impact human health and disease. Students will learn how to help prevent injuries and disease by managing environmental hazards and promoting healthier air, water, soil, homes, workplaces, and communities. The degree program is one of only 31 programs nationwide to be fully accredited by the standards of the National Environmental Health Science and Protection Accreditation Council, and the only such program in Colorado.

The Environmental Health degree prepares students for employment by public sector environmental agencies, private industry, academic institutions, as well as graduate study in medicine, veterinary medicine, and related biomedical and health fields. The basic science requirements for the major will meet admission requirements for accredited medical and veterinary medical schools in North America.

Students will begin their studies with foundational science courses including biology, physics, general chemistry, organic chemistry, calculus, and statistics, and then use these basic sciences as tools to solve environmental health problems. Students are involved in actual and simulated field projects with data gathering and analysis, characterization of environmental health problems, evaluation of alternative solutions, and presentation of results in written and oral formats. All Environmental Health students will complete a professional internship for academic credit with a private sector company, environmental health agency, or research entity (public or private). Read about Environmental Health student internships on the department website.

Learning Outcomes

Students will:

- Effectively communicate the health consequences of actions, behaviors, or environmental degradation to the public, political community, legal experts, or the media
- Demonstrate critical thinking and problem solving abilities for environmental issues as an individual and as a member of a problem solving team
• Integrate knowledge in social, physical, and biological sciences to evaluate environmental issues
• Apply knowledge of scientific methods to evaluate compliance with environmental health standards and assess risks to workers and the public

Potential Occupations
Career opportunities include, but are not limited to: environmental health specialist, public health specialist, industrial hygienist, toxicologist, epidemiologist, health, education, air and water pollution specialist, hazardous and solid waste specialist, or health and safety specialist. More information on career opportunities (http://csu-cvmbs.colostate.edu/academics/erhs/Pages/Careers-Environmental-and-Radiological-Health-Science.aspx) can be found on the department website.

Requirements

Effective Fall 2015

Freshman

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<th>Course</th>
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<th>Credits</th>
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<td>General Chemistry I (GT-SC2)</td>
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<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
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<td>CHEM 113</td>
<td>General Chemistry II</td>
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<td>General Chemistry Lab II</td>
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<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
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<td>ERHS 220</td>
<td>Environmental Health</td>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
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<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
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<td><strong>Electives</strong></td>
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Sophomore

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<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
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<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
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<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
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<td>ERHS 230</td>
<td>Environmental Health Field Methods</td>
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<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
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<td><strong>Social and Behavioral Sciences</strong></td>
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Junior

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<td>CO 300</td>
<td>Writing Arguments (GT-CO3)</td>
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<td>CO 301B</td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
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<td>ERHS 320</td>
<td>Environmental Health - Water and Food Safety</td>
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<td>ERHS 332</td>
<td>Principles of Epidemiology</td>
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<td>ERHS 350</td>
<td>Industrial Hygiene and Air</td>
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<td>ERHS 450</td>
<td>Introduction to Radiation Biology</td>
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<td>ERHS 479</td>
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<td>MIP 300</td>
<td>General Microbiology</td>
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<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
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Senior

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<tr>
<td>ERHS 446</td>
<td>Environmental Toxicology</td>
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<tr>
<td>ERHS 487</td>
<td>Internship-Environmental Health</td>
<td>4C</td>
</tr>
<tr>
<td>Historical Perspectives</td>
<td></td>
<td>3D</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td></td>
<td>3E</td>
</tr>
<tr>
<td>Program Electives¹</td>
<td></td>
<td>5</td>
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<tr>
<td>Electives²</td>
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<td>12</td>
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<tr>
<td><strong>Total Credits</strong></td>
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</tbody>
</table>

Program Total Credits: 120

¹ Must be related to major and approved by an ERHS key advisor.
² Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

To prepare for first semester: The curriculum for the Environmental Health Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. LIFE 102 requires high school chemistry; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by taking Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam.

**Freshman**

**Semester 1**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
<td>1</td>
</tr>
<tr>
<td>ERHS 220</td>
<td>Environmental Health</td>
<td>2</td>
</tr>
<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>4</td>
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<tr>
<td>Arts and Humanities</td>
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</tr>
</tbody>
</table>

**Total Credits** 15

**Sophomore**

**Semester 3**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS 300</td>
<td>Principles of Human Physiology</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 230</td>
<td>Environmental Health Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
<td>5</td>
</tr>
<tr>
<td>ERHS 220</td>
<td></td>
<td>4</td>
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</tbody>
</table>

**Total Credits** 15

**Semester 4**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
<td>5</td>
</tr>
</tbody>
</table>

**Total Credits** 15
<table>
<thead>
<tr>
<th></th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major in Environmental Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 307</td>
<td></td>
<td>Introduction to Biostatistics</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
<td></td>
<td>3C</td>
</tr>
<tr>
<td>BMS 300 and ERHS 230 must be completed by the end of Semester 4.</td>
<td>X</td>
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<td>Total Credits</td>
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**Junior**

<table>
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<tr>
<th>Semester 5</th>
<th>Critical</th>
<th>Recommended</th>
<th>AUCC</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ERHS 320</td>
<td></td>
<td>Environmental Health - Water and Food Safety</td>
<td>4A</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 350</td>
<td></td>
<td>Industrial Hygiene and Air</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MIP 300</td>
<td></td>
<td>General Microbiology</td>
<td>X</td>
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<td>MIP 302</td>
<td></td>
<td>General Microbiology Laboratory</td>
<td></td>
<td>2</td>
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<tr>
<td>Select one course from the following:</td>
<td></td>
<td></td>
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<tr>
<td>CO 300</td>
<td></td>
<td>Writing Arguments (GT-CO3)</td>
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</tr>
<tr>
<td>CO 301B</td>
<td></td>
<td>Writing in the Disciplines: Sciences (GT-CO3)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>PH 121</td>
<td></td>
<td>must be completed by the end of Semester 5.</td>
<td>X</td>
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<tr>
<td>Total Credits</td>
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**Semester 6**

<table>
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<tr>
<th>Critical</th>
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<th>AUCC</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
<td></td>
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<tr>
<td>ERHS 332</td>
<td>Principles of Epidemiology</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ERHS 450</td>
<td>Introduction to Radiation Biology</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ERHS 479</td>
<td>Environmental Health Practice</td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td></td>
<td></td>
<td>3B</td>
</tr>
<tr>
<td>BMS 300, PH 122, and STAT 307 must be completed by the end of Semester 6.</td>
<td>X</td>
<td></td>
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<tr>
<td>Total Credits</td>
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**Senior**

<table>
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<tr>
<th>Semester 7</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ERHS 446</td>
<td></td>
<td>Environmental Toxicology</td>
<td>X</td>
<td>3</td>
</tr>
<tr>
<td>Program Electives (See Department List)</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
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<tr>
<td>Historical Perspectives</td>
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<td>3D</td>
<td>3</td>
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<td>Electives</td>
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**Semester 8**

<table>
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<tr>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 410</td>
<td>Environmental Health and Waste Management</td>
<td>X</td>
<td>4B</td>
</tr>
<tr>
<td>ERHS 487</td>
<td>Internship-Environmental Health</td>
<td>X</td>
<td>4C</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>X</td>
<td>3E</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>X</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>The benchmark courses for Semester 8 are the remaining courses in the entire program of study.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Program Total Credits: 120
Minor in Environmental Health

A minor in Environmental Health will benefit majors in the biosciences interested in career options in public health, private sector environmental health and safety, sustainability, or graduate school.

Requirements

Effective Fall 2011

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 220</td>
<td>Environmental Health</td>
<td>2</td>
</tr>
<tr>
<td>ERHS 320</td>
<td>Environmental Health - Water and Food Safety</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 332</td>
<td>Principles of Epidemiology</td>
<td>1</td>
</tr>
<tr>
<td>ERHS 446</td>
<td>Environmental Toxicology</td>
<td>1</td>
</tr>
</tbody>
</table>

Department Courses

Select at least 6 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 230</td>
<td>Environmental Health Field Methods</td>
<td></td>
</tr>
<tr>
<td>ERHS 332</td>
<td>Principles of Epidemiology</td>
<td></td>
</tr>
<tr>
<td>ERHS 350</td>
<td>Industrial Hygiene and Air</td>
<td></td>
</tr>
<tr>
<td>ERHS 405</td>
<td>Fundamentals of Ergonomics</td>
<td></td>
</tr>
<tr>
<td>ERHS 410</td>
<td>Environmental Health and Waste Management</td>
<td></td>
</tr>
<tr>
<td>ERHS 430</td>
<td>Human Disease and the Environment</td>
<td></td>
</tr>
<tr>
<td>ERHS 446</td>
<td>Environmental Toxicology</td>
<td></td>
</tr>
<tr>
<td>ERHS 448</td>
<td>Environmental Contaminants: Exposure and Fate</td>
<td></td>
</tr>
<tr>
<td>ERHS 450</td>
<td>Introduction to Radiation Biology</td>
<td>0-7</td>
</tr>
</tbody>
</table>

Total Credits 21

1 ERHS 332 or ERHS 446 may be used as a department course if not selected as core course.
2 Select 13 credits minimum to include at least 6 credits of upper division ERHS courses.
3 Select from department list of approved courses up to 7 credits.

Master of Science in Environmental Health, Plan B, Environmental Health and Safety Specialization

Requirements

Effective Fall 2014

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 503</td>
<td>Toxicology Principles</td>
<td>1</td>
</tr>
<tr>
<td>ERHS 504</td>
<td>Occupational and Environmental Toxicology</td>
<td>2</td>
</tr>
<tr>
<td>ERHS 526</td>
<td>Industrial Hygiene</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 528</td>
<td>Occupational Safety</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 637</td>
<td>Environment, Safety, and Health Management</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 675</td>
<td>Environmental Health Regulatory Compliance</td>
<td>3</td>
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</tbody>
</table>

Selected Courses

Select at least two courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 400</td>
<td>Radiation Safety</td>
<td></td>
</tr>
<tr>
<td>or ERHS 530</td>
<td>Radiological Physics and Dosimetry I</td>
<td></td>
</tr>
<tr>
<td>ERHS 410</td>
<td>Environmental Health and Waste Management</td>
<td></td>
</tr>
<tr>
<td>ERHS 536</td>
<td>Advanced Occupational Health</td>
<td></td>
</tr>
<tr>
<td>ERHS 540</td>
<td>Principles of Ergonomics</td>
<td></td>
</tr>
<tr>
<td>ERHS 549</td>
<td>Environmental Health Risk Assessment</td>
<td></td>
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</tbody>
</table>

Select a minimum of 11 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ATS 555</td>
<td>Air Pollution</td>
<td></td>
</tr>
<tr>
<td>ATS 560</td>
<td>Air Pollution Measurement</td>
<td></td>
</tr>
<tr>
<td>CIVE 547/STAT 547 or VS 562</td>
<td>Statistics for Environmental Monitoring or Applied Data Analysis</td>
<td></td>
</tr>
<tr>
<td>ERHS 527</td>
<td>Industrial Hygiene Laboratory</td>
<td></td>
</tr>
<tr>
<td>ERHS 531</td>
<td>Nuclear Instruments and Measurements</td>
<td></td>
</tr>
<tr>
<td>ERHS 541</td>
<td>Ergonomics in Product and Process Design</td>
<td></td>
</tr>
<tr>
<td>ERHS 546</td>
<td>Environmental Exposure Assessment</td>
<td></td>
</tr>
<tr>
<td>ERHS 636</td>
<td>Industrial Hygiene Control Methods</td>
<td></td>
</tr>
<tr>
<td>ERHS 656</td>
<td>Occupational Noise Control</td>
<td></td>
</tr>
<tr>
<td>ERHS 658</td>
<td>Environmental/Occupational Epidemiology</td>
<td></td>
</tr>
<tr>
<td>ERHS 695B</td>
<td>Independent Study: Occupational and Environmental Health</td>
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</tr>
<tr>
<td>ERHS 726</td>
<td>Aerosols and Environmental Health</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 32

A minimum of 32 credits are required to complete this program.
1 Additional courses from this list may be taken to count toward the program total.
2 Students may apply a maximum of 3 credits of Independent Study toward the degree.

A comprehensive exam is required.

Master of Science in Environmental Health, Ergonomics Specialization

Requirements

Effective Spring 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 520</td>
<td>Environmental and Occupational Health Issues</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 532</td>
<td>Epidemiologic Methods</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 544/STAT 544</td>
<td>Biostatistical Methods for Quantitative Data</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 679</td>
<td>Occ Env Health Interdisciplinary Symposium</td>
<td>2</td>
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</tbody>
</table>

Environmental and Occupational Health Core Courses

ERHS 520 Environmental and Occupational Health Issues 3
ERHS 532 Epidemiologic Methods 3
ERHS 544/STAT 544 Biostatistical Methods for Quantitative Data 3
ERHS 679 Occ Env Health Interdisciplinary Symposium 2

Ergonomics Core Courses

ERHS 528 Occupational Safety 3
ERHS 540 Principles of Ergonomics 3
ERHS 541 Ergonomics in Product and Process Design 3

Additional Coursework

ERHS 687 Internship 1 3
ERHS 699 Thesis 2 4
ERHS Department Electives 1 3
Out-of-department Course 1 3

Total Credits 33

A minimum of 33 credits are required to complete this program.

1 Select a minimum of 3 credits.
2 Select a minimum of 4 credits.

Master of Science in Environmental Health, Plan A, Industrial Hygiene Specialization

Requirements

Grandfather

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 520</td>
<td>Environmental and Occupational Health Issues</td>
<td>3</td>
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<tr>
<td>ERHS 526</td>
<td>Industrial Hygiene</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 527</td>
<td>Industrial Hygiene Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ERHS 532</td>
<td>Epidemiologic Methods</td>
<td>3</td>
</tr>
</tbody>
</table>

Select a minimum of 20 credits from the following:

ERHS 520 Environmental and Occupational Health Issues 3
ERHS 526 Industrial Hygiene 3
ERHS 527 Industrial Hygiene Laboratory 1
ERHS 532 Epidemiologic Methods 3

Select one from the following: 1-4

ERHS 679 Occ Env Health Interdisciplinary Symposium 1
ERHS 693B Research Seminar: Industrial Hygiene 2

Out-of-Department Electives 3 3
Statistics 4 3

Elective Courses

Select a minimum of 9 credits from the following: 9
ERHS 502 Fundamentals of Toxicology 5
ERHS 503 Toxicology Principles 3
ERHS 504 Occupational and Environmental Toxicology 3
ERHS 528 Occupational Safety 3
ERHS 530 Radiological Physics and Dosimetry I 3
ERHS 536 Advanced Occupational Health 3
ERHS 540 Principles of Ergonomics 3
ERHS 541 Ergonomics in Product and Process Design 3
ERHS 547 Equipment and Instrumentation 3
ERHS 549 Environmental Health Risk Assessment 3
ERHS 550 Principles of Radiation Biology 3
ERHS 636 Industrial Hygiene Control Methods 3
ERHS 637 Environment, Safety, and Health Management 3
ERHS 656 Occupational Safety, and Health Management 3
ERHS 698 Research 3
ERHS 726 Aerosols and Environmental Health 3

Thesis

ERHS 699 Thesis 4-6

RCR

Responsible Conduct Research Training 6 0

Total Credits 30

A minimum of 30 credits are required to complete this program.

1 Required for MAP ERC Trainees.
2 Maximum of 4 credits allowed.
3 Select credits with approval of advisor and graduate committee.
4 Select three credits of statistics with approval of advisor and graduate committee.
5 EHOH 6616 is an acceptable substitution for ERHS 502 from the Colorado School of Public Health at University of Colorado Denver.
6 Required of all master's students enrolled in the program.
Master of Science in Environmental Health, Plan B, Industrial Hygiene Specialization

Requirements
Grandfather
Program requires a minimum of 40 semester credits with a professional paper and an internship; or one year of professional experience in occupational or environmental health-related areas.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Courses</td>
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<tr>
<td>ERHS 520</td>
<td>Environmental and Occupational Health Issues</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 526</td>
<td>Industrial Hygiene</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 527</td>
<td>Industrial Hygiene Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ERHS 532</td>
<td>Epidemiologic Methods</td>
<td>3</td>
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<td>Directed Electives</td>
<td>1-4</td>
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<tr>
<td>ERHS 679</td>
<td>Occ Env Health Interdisciplinary Symposium</td>
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</tr>
<tr>
<td>ERHS 693B</td>
<td>Research Seminar: Industrial Hygiene</td>
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</tr>
<tr>
<td></td>
<td>Out-of-Department Electives</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Statistics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective Courses</td>
<td></td>
</tr>
<tr>
<td>ERHS 502</td>
<td>Fundamentals of Toxicology</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 503</td>
<td>Toxicology Principles</td>
<td></td>
</tr>
<tr>
<td>ERHS 504</td>
<td>Occupational and Environmental Toxicology</td>
<td></td>
</tr>
<tr>
<td>ERHS 528</td>
<td>Occupational Safety</td>
<td></td>
</tr>
<tr>
<td>ERHS 530</td>
<td>Radiological Physics and Dosimetry I</td>
<td></td>
</tr>
<tr>
<td>ERHS 536</td>
<td>Advanced Occupational Health</td>
<td></td>
</tr>
<tr>
<td>ERHS 540</td>
<td>Principles of Ergonomics</td>
<td></td>
</tr>
<tr>
<td>ERHS 541</td>
<td>Ergonomics in Product and Process Design</td>
<td></td>
</tr>
<tr>
<td>ERHS 547</td>
<td>Equipment and Instrumentation</td>
<td></td>
</tr>
<tr>
<td>ERHS 549</td>
<td>Environmental Health Risk Assessment</td>
<td></td>
</tr>
<tr>
<td>ERHS 550</td>
<td>Principles of Radiation Biology</td>
<td></td>
</tr>
<tr>
<td>ERHS 636</td>
<td>Industrial Hygiene Control Methods</td>
<td></td>
</tr>
<tr>
<td>ERHS 637</td>
<td>Environment, Safety, and Health Management</td>
<td></td>
</tr>
<tr>
<td>ERHS 656</td>
<td>Occupational Noise Control</td>
<td></td>
</tr>
<tr>
<td>ERHS 698</td>
<td>Research</td>
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<tr>
<td>ERHS 726</td>
<td>Aerosols and Environmental Health</td>
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</tr>
<tr>
<td>PSY 792D</td>
<td>Advanced Seminar: Industrial/Organizational Psychology</td>
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<tr>
<td></td>
<td>Independent Study</td>
<td>4</td>
</tr>
<tr>
<td>ERHS 695A</td>
<td>Independent Study: Epidemiology</td>
<td></td>
</tr>
<tr>
<td>ERHS 695B</td>
<td>Independent Study: Occupational and Environmental Health</td>
<td></td>
</tr>
<tr>
<td>ERHS 695C</td>
<td>Independent Study: Toxicology</td>
<td></td>
</tr>
<tr>
<td>ERHS 695D</td>
<td>Independent Study: Radiation Chemistry</td>
<td></td>
</tr>
<tr>
<td>ERHS 695E</td>
<td>Independent Study: Radiation Ecology</td>
<td></td>
</tr>
<tr>
<td>ERHS 695F</td>
<td>Independent Study: Cancer Biology</td>
<td></td>
</tr>
<tr>
<td>ERHS 695G</td>
<td>Independent Study: Health Physics</td>
<td></td>
</tr>
<tr>
<td>ERHS 695H</td>
<td>Independent Study: Exposure Assessment</td>
<td></td>
</tr>
<tr>
<td>ERHS 695I</td>
<td>Independent Study: Small Animal Radiology</td>
<td></td>
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<tr>
<td>ERHS 695J</td>
<td>Independent Study: Large Animal Radiology</td>
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<tr>
<td>ERHS 695K</td>
<td>Independent Study: Special Techniques in Radiology</td>
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<tr>
<td>ERHS 695L</td>
<td>Independent Study: Radiation Therapy</td>
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<tr>
<td>ERHS 695M</td>
<td>Independent Study: Computed Tomography</td>
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<tr>
<td>ERHS 695N</td>
<td>Independent Study: Magnetic Resonance Imaging</td>
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<tr>
<td>ERHS 695O</td>
<td>Independent Study: Ultrasound</td>
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<tr>
<td>ERHS 695P</td>
<td>Independent Study: Nuclear Medicine</td>
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<td></td>
<td>Responsible Conduct Research Training</td>
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</tbody>
</table>

A minimum of 40 credits are required to complete this program.
1 Required for MAP ERC Trainees.
2 Maximum of 4 credits allowed.
3 Two additional courses approved by student’s committee.
4 Select courses with approval of advisor and graduate committee.
5 Select three credits of statistics with approval of advisor and graduate committee.
6 EHOH 6616 is an acceptable substitution for ERHS 502 from the Colorado School of Public Health at University of Colorado Denver.
7 Required of all master’s students enrolled in the program.

Master of Science in Environmental Health, Plan A, Toxicology Specialization

No new students are being accepted into this Specialization. Students interested in this area of study should see the Master of Science in Toxicology.

Requirements
Effective Spring 2012

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Courses</td>
<td></td>
</tr>
<tr>
<td>ERHS 502</td>
<td>Fundamentals of Toxicology</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 601</td>
<td>Metabolism and Disposition of Toxic Agents</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 602</td>
<td>Toxicological Mechanisms</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 603</td>
<td>Toxicological Pathology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Departmental Electives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select a minimum of 9 credits from the following:</td>
<td></td>
</tr>
<tr>
<td>Group A.</td>
<td>Select at least one course from the following:</td>
<td>3</td>
</tr>
</tbody>
</table>
Master of Science in Environmental Health, Plan B, Toxicology Specialization

No new students are being accepted into this Specialization. Students interested in this area of study should see the Master of Science in Toxicology.

Requirements
Effective Spring 2012

<table>
<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ERHS 502</td>
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<td>ERHS 602</td>
<td>Toxicological Mechanisms</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 603</td>
<td>Toxicological Pathology</td>
<td>3</td>
</tr>
</tbody>
</table>

Departmental Electives
Select a minimum of 9 credits from the following:

<table>
<thead>
<tr>
<th>Group A. Select at least one course from the following:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 520</td>
<td>Environmental and Occupational Health Issues</td>
</tr>
<tr>
<td>ERHS 566</td>
<td>Forensic Toxicology</td>
</tr>
<tr>
<td>ERHS 568</td>
<td>Pharmaceutical and Regulatory Toxicology</td>
</tr>
</tbody>
</table>

Group B. Select at least two courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 448</td>
<td>Environmental Contaminants: Exposure and Fate</td>
<td>6</td>
</tr>
<tr>
<td>ERHS 547</td>
<td>Equipment and Instrumentation</td>
<td></td>
</tr>
<tr>
<td>ERHS 549</td>
<td>Environmental Health Risk Assessment</td>
<td></td>
</tr>
<tr>
<td>ERHS 567</td>
<td>Cell and Molecular Toxicology Techniques</td>
<td></td>
</tr>
<tr>
<td>ERHS 733</td>
<td>Environmental Carcinogenesis</td>
<td></td>
</tr>
</tbody>
</table>

Other Requirements

Seminar: 1
Out-of-Department Requirement: 3
Electives: 7

Additional Requirements

Students must also pass a required comprehensive exam.

Total Credits: 30

A minimum of 30 credits are required to complete this program.

1 Courses from Departmental Electives Group A not used to fulfill that requirement may be selected to fulfill the Group B requirement.
2 Select one credit of a seminar course from department list of approved courses.
3 Select a minimum of 3 credits at the 500-level or above, with approval of advisor and graduate committee.
4 No more than a total of 6 credits in Independent Study, Group Study, Research, and Internship course(s) may be included.

Master of Science in Toxicology, Plan A

Requirements
Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 502</td>
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<td>ERHS 602</td>
<td>Toxicological Mechanisms</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 603</td>
<td>Toxicological Pathology</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 693C</td>
<td>Research Seminar: Toxicology</td>
<td>1</td>
</tr>
</tbody>
</table>

Toxicology Courses
Select at least 9 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERHS 448</td>
<td>Environmental Contaminants: Exposure and Fate</td>
<td>1</td>
</tr>
<tr>
<td>ERHS 520</td>
<td>Environmental and Occupational Health Issues</td>
<td></td>
</tr>
<tr>
<td>ERHS 546</td>
<td>Environmental Exposure Assessment</td>
<td></td>
</tr>
<tr>
<td>ERHS 547</td>
<td>Equipment and Instrumentation</td>
<td></td>
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<td>ERHS 568</td>
<td>Pharmaceutical and Regulatory Toxicology</td>
<td></td>
</tr>
<tr>
<td>ERHS 569</td>
<td>Immunotoxicology</td>
<td></td>
</tr>
<tr>
<td>ERHS 733</td>
<td>Environmental Carcinogenesis</td>
<td></td>
</tr>
</tbody>
</table>
Other Requirements
Electives 1,2,3  3-5
Thesis
ERHS 699  Thesis  3-5
Total Credits  30

A minimum of 30 credits are required to complete this program.

1 A maximum of 6 credits below 500-level may be counted toward the program total.
2 Eligible courses determined by advisor and graduate committee.
3 No more than a total of 6 credits of Internship, Independent Study, Group Study, and Research courses may be included in the program.

Master of Science in Toxicology, Plan B
Requirements
Effective Fall 2016

Core Courses
Code  Title  Credits
ERHS 502  Fundamentals of Toxicology  3
ERHS 601  Metabolism and Disposition of Toxic Agents  3
ERHS 602  Toxicological Mechanisms  3
ERHS 603  Toxicological Pathology  3
ERHS 693C  Research Seminar: Toxicology  1

Toxicology Courses 1
Select at least 9 credits from the following:  9
ERHS 448  Environmental Contaminants: Exposure and Fate  1
ERHS 520  Environmental and Occupational Health Issues  3
ERHS 546  Environmental Exposure Assessment  3
ERHS 547  Equipment and Instrumentation  3
ERHS 549  Environmental Health Risk Assessment  3
ERHS 566  Forensic Toxicology  3
ERHS 567  Cell and Molecular Toxicology Techniques  3
ERHS 568  Pharmaceutical and Regulatory Toxicology  3
ERHS 569  Immunotoxicology  3
ERHS 733  Environmental Carcinogenesis  3

Other Requirements
Electives 1,2,3  10
Total Credits  32

A minimum of 32 credits are required to complete this program.

Successful completion of a comprehensive examination is required.

1 A maximum of 6 credits below 500-level may be counted toward the program total.
2 Eligible courses determined by advisor and graduate committee.
3 No more than a total of 6 credits of Internship, Independent Study, Group Study, and Research courses may be included in the program.

Ph.D. in Environmental Health, Ergonomics Specialization
Requirements
Effective Spring 2013

Code  Title  Credits
Environmental and Occupational Health Core Courses
ERHS 520  Environmental and Occupational Health Issues  3
ERHS 532  Epidemiologic Methods  3
ERHS 544/STAT 544  Biostatistical Methods for Quantitative Data  3
ERHS 679  Occ Env Health Interdisciplinary Symposium  2

Ergonomics Core Courses
ERHS 528  Occupational Safety  3
ERHS 536  Advanced Occupational Health  3
ERHS 540  Principles of Ergonomics  3
ERHS 541  Ergonomics in Product and Process Design  3
ERHS 542  Biostatistical Methods for Qualitative Data  3
ERHS 642  Applied Logistic Regression  3
ERHS 658  Environmental/Occupational Epidemiology  3
ERHS 687  Internship  3
ERHS 784  Supervised College Teaching  1

Additional Coursework
ERHS 799  Dissertation  19-28
Department Course Selection  3-9
Out-of-department Courses  6-9
Total Credits  72

A minimum of 72 credits are required to complete this program.

Ph.D. in Environmental Health, Industrial Hygiene Specialization
Requirements
Grandfather

Code  Title  Credits
Core Courses
ERHS 520  Environmental and Occupational Health Issues  3
ERHS 526  Industrial Hygiene  3
ERHS 527  Industrial Hygiene Laboratory  1
ERHS 532  Epidemiologic Methods  3

Select one from the following:  1-4
ERHS 679  Occ Env Health Interdisciplinary Symposium  1
ERHS 693B  Research Seminar: Industrial Hygiene  2

Out-of-Department Courses  6
Statistics  3
Elective Courses  5
Select a minimum of 15 credits from the following: 15

ERHS 502  Fundamentals of Toxicology
ERHS 503  Toxicology Principles
ERHS 504  Occupational and Environmental Toxicology
ERHS 528  Occupational Safety
ERHS 530  Radiological Physics and Dosimetry I
ERHS 536  Advanced Occupational Health
ERHS 540  Principles of Ergonomics
ERHS 541  Ergonomics in Product and Process Design
ERHS 547  Equipment and Instrumentation
ERHS 549  Environmental Health Risk Assessment
ERHS 550  Principles of Radiation Biology
ERHS 601  Metabolism and Disposition of Toxic Agents
ERHS 602  Toxicological Mechanisms
ERHS 603  Toxicological Pathology
ERHS 693  Research Seminar: Toxicology

Dissertation
ERHS 799  Dissertation 15-20

RCR
Responsible Conduct Research Training 6  0

Total Credits 72

A minimum of 72 credits are required to complete this program.

1 Required for MAP ERC Trainees.
2 Maximum of 4 credits allowed.
3 Minimum of 6 credits in 2 courses with approval of advisor and graduate committee.
4 Select three credits of statistics with approval of advisor and graduate committee.
5 Other ERHS 500-level or higher courses may be approved on a case by case basis by the graduate advisory committee.
6 Required of all Ph.D. students enrolled in the program.

Ph.D. in Environmental Health, Toxicology Specialization

No new students are being accepted into this Specialization. Students interested in this area of study should see the Ph.D. in Toxicology.

Requirements
Effective Spring 2008

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ERHS 502</td>
<td>Metabolism and Disposition of Toxic Agents</td>
<td>3</td>
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<td>ERHS 603</td>
<td>Toxicological Pathology</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 799</td>
<td>Dissertation</td>
<td>Var</td>
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</table>

Ph.D. in Toxicology
Requirements
Effective Fall 2016

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
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<td>Toxicological Pathology</td>
<td>3</td>
</tr>
<tr>
<td>ERHS 693C</td>
<td>Research Seminar: Toxicology</td>
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</table>

Other Requirements

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>ERHS 448</td>
<td>Environmental Contaminants: Exposure and Fate</td>
<td>5</td>
</tr>
</tbody>
</table>
A minimum of 72 credits are required to complete this program.

1. Select courses as approved by advisor and graduate committee.
2. A maximum of 6 credits below 500-level may be counted toward the program total.
3. A minimum of 1 credit of graduate seminar determined by the advisor and graduate committee in addition to the core requirement of ERHS 693C.
4. Select enough dissertation credits to bring the program total to a minimum of 72 credits as approved by the advisor and graduate committee.

Department of Microbiology, Immunology, and Pathology

Office in Pathology Building, Room 110
(970) 491-6144
cvmbs.colostate.edu/academics/mip/ (http://cvmbs.colostate.edu/academics/mip/pages/default.aspx)

Professor Gregg Dean, Department Head
Associate Professor Mark Zabel, Associate Head for Graduate Education
Professor Erica Suchman, Associate Head for Undergraduate Education
Associate Professor Kristy Pabilonia, Associate Head for DVM and Clinical Service

Professor Jeff Wilusz, Program Coordinator, Plan B Master’s Degree Program

Undergraduate Majors
- Major in Microbiology

Minors
- Minor in Microbiology

Graduate

Graduate Programs in Microbiology, Immunology and Pathology

The department offers graduate programs (http://csu-cvmbs.colostate.edu/academics/mip/graduate/Pages/default.aspx) leading to Master of Science, Doctor of Philosophy, and combined Doctor of Veterinary Medicine/Doctor of Philosophy degrees. Students interested in graduate work should refer to the Graduate and Professional Bulletin and the Department of Microbiology, Immunology and Pathology (http://csu-cvmbs.colostate.edu/academics/mip/Pages/default.aspx).

The research programs (http://csu-cvmbs.colostate.edu/academics/mip/Pages/default.aspx) in the department provide excellent opportunities for graduate training in fundamentals of modern investigative microbiology, immunology, and pathobiology. An emphasis is placed on a multi-disciplinary approach to research problems. Areas of research strength in the department include bacteriology, immunology, mycobacterial diseases, prion biology, vector borne infectious diseases, and virology. Please visit the Department of Microbiology (http://csu-cvmbs.colostate.edu/academics/mip/graduate/Pages/Microbiology-MS-and-PhD-Program.aspx) for more information.

Master Programs
- Master of Science in Microbiology, Plan A*
- Master of Science in Microbiology, Plan B

Ph.D.
- Ph.D. in Microbiology*
- Ph.D. in Pathology*

* Please see department for program of study.

Courses

Microbiology, Immunology, and Pathology (MIP)

MIP 101 Introduction to Human Disease (GT-SC2) Credits: 3 (3-0-0)
Course Description: Survey of human systems and diseases.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).
MIP 149 The Microbial World Credits: 3 (3-0-0)  
Course Description: Importance of microbiology in daily life, with emphasis on positive and negative roles of microbes, infectious disease, and current microbiology issues.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 150 Introduction to Research Methods Credits: 3 (0-6-0)  
Course Description: Undergraduate research experience highlighting fundamental skills of laboratory research while working towards the goal of novel microbial discovery.  
Prerequisite: None.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 152 Microbiology First-Year Seminar Credits: 2 (0-0-2)  
Course Description: Introduction to microbiology major and faculty, academic and career planning; information sources in biomedical sciences.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 260 The World of Parasites Credits: 3 (3-0-0)  
Course Description: Introduction to parasitology; evolution, ecology, epidemiology, physiology, and morphology of representative parasites of every group.  
Prerequisite: (CHEM 111) and (BZ 110 or LIFE 102).  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 275 Microcomputing Applications in Microbiology Credits: 2 (1-0-1)  
Course Description: Network software on MS-DOS microcomputers will be used to acquire and analyze data and information that are commonly encountered in microbiology.  
Prerequisite: None.  
Registration Information: Must register for lecture and recitation.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 298 Introductory Research Credits: Var[1-3] (0-0-0)  
Course Description: Freshman/sophomore research experience in a working research environment.  
Prerequisite: None.  
Registration Information: Written consent of instructor required.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

MIP 300 General Microbiology Credits: 3 (3-0-0)  
Course Description: Structure, function, development, physiology, and molecular biology of microorganisms emphasizing bacteria.  
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently).  
Registration Information: Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 302 General Microbiology Laboratory Credits: 2 (0-4-0)  
Course Description: Laboratory skills and techniques for isolating, characterizing, and identifying bacteria.  
Prerequisite: MIP 300, may be taken concurrently.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 303 General Microbiology–Honors Recitation Credit: 1 (0-0-1)  
Course Description: Research and present topics related to the material presented in MIP 300.  
Prerequisite: None.  
Registration Information: Participation in the Honors Program required. Must have concurrent registration in MIP 300.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 315 Human and Animal Disease Credits: 3 (3-0-0)  
Course Description: Biological systems critical to mammalian physiology and how each is affected by metabolic, genetic, environmental, and infectious agents.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 334 Food Microbiology Credits: 3 (3-0-0)  
Course Description: Microorganisms in production of foods, in preservation and spoilage, and in food-borne diseases. Control of microorganisms in foods.  
Prerequisite: LIFE 205 or MIP 300.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 335 Food Microbiology Laboratory Credits: 2 (0-4-0)  
Course Description: Laboratory skills and techniques related to the presence of microorganisms in food, production, and preservation.  
Prerequisite: (LIFE 206 or MIP 302) and (MIP 334, may be taken concurrently).  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 342 Immunology Credits: 4 (3-0-1)  
Course Description: Principles of immunology; components of the immune system, interactions of humoral and cellular elements, and clinical applications of basic concepts.  
Prerequisite: (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently) and (LIFE 201B or LIFE 210 or MIP 300).  
Registration Information: Must register for lecture and recitation.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

MIP 343 Immunology Laboratory Credits: 2 (0-4-0)  
Course Description: Techniques used in research and clinical immunology, including diagnostic problem solving and data analysis.  
Prerequisite: MIP 302 and MIP 342, may be taken concurrently.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
MIP 350  Microbial Diversity  Credits: 3 (3-0-0)
Course Description: Physiological, taxonomic, and phylogenetic aspects of microbial diversity. Yeasts and filamentous fungi as microbial entities.
Prerequisite: MIP 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 351  Medical Bacteriology  Credits: 3 (3-0-0)
Course Description: Bacteria which cause human and veterinary diseases; host-parasite relationships, disease mechanisms, prevention, and therapy.
Prerequisite: MIP 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 352  Medical Bacteriology Laboratory  Credits: 3 (0-6-0)
Course Description: Laboratory skills and techniques necessary for identifying medically important bacteria.
Prerequisite: MIP 302 and MIP 351, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 384  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: None.
Registration Information: Written consent of department required. Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 400A  Capstone in Microbiology: Medical Microbiology  Credits: 2 (2-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400B  Capstone in Microbiology: Biotechnology  Credits: 2 (0-0-2)
Course Description: Isolation and characterization of viruses. Viral diagnostic and cell culture techniques.
Prerequisite: (BC 351 or BC 401) and (MIP 300).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400C  Capstone in Microbiology: Immunology  Credits: 2 (2-0-0)
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation.
Terms Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400D  Capstone in Microbiology: Microbial Diversity/Ecology  Credits: 2 (2-0-0)
Course Description: Yeasts and filamentous fungi as microbial entities.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400E  Capstone in Microbiology: Microbial Genetics  Credits: 2 (2-0-0)
Course Description: Bacteria which cause human and veterinary diseases; host-parasite relationships, disease mechanisms, prevention, and therapy.
Prerequisite: MIP 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400F  Capstone in Microbiology: Virology  Credits: 2 (2-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400G  Capstone in Microbiology: Service Learning  Credits: 2 (2-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 420  Medical and Molecular Virology  Credits: 4 (4-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 425  Virology and Cell Culture Laboratory  Credits: 2 (0-4-0)
Course Description: Isolation and characterization of viruses. Viral diagnostic and cell culture techniques.
Prerequisite: MIP 302 and MIP 420, may be taken concurrently.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 432  Microbial Ecology  Credits: 3 (2-0-1)
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation.
Terms Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
MIP 433  Microbial Ecology Laboratory  Credit: 1 (0-3-0)
Course Description: Experimental microbial ecology; the design, conduct and interpretation of experiments that illustrate basic principles of microbial ecology.
Prerequisite: MIP 432, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 436  Industrial Microbiology  Credits: 4 (2-4-0)
Course Description: Use of microorganisms for producing commercially valuable products.
Prerequisite: LIFE 206 or MIP 302.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 443  Microbial Physiology  Credits: 4 (3-0-1)
Course Description: Structure, function of bacterial constituents; comparison with other organisms. Bacterial growth, energy production, biosynthesis.
Prerequisite: (MIP 300) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 450  Microbial Genetics  Credits: 3 (3-0-0)
Course Description: Principles of genetics at molecular level; mutation, recombination, complementation, suppression, control of gene expression, and recombinant DNA.
Prerequisite: (MIP 300) and (BC 351, may be taken concurrently or BC 401, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 462  Parasitology and Vector Biology  Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and BZ 462.
Course Description: Protozoa, helminthes, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (MIP 302 or LIFE 206 or BZ 212).
Registration Information: Credit allowed for only one of the following: MIP 462, BSPM 462, BZ 462. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 496  Group Study  Credits: Var[1-3] (0-0-0)
Course Description: Faculty-supervised investigation of areas of special interest in microbiology, virology, microbial physiology, or microbial genetics.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 498  Research  Credits: Var[1-3] (0-0-0)
Course Description: Principles of research.
Prerequisite: MIP 300.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 530  Advanced Molecular Virology  Credits: 4 (3-0-1)
Course Description: Virus-host interactions at the molecular and cellular level.
Prerequisite: (BC 351 or BC 401) and (BC 463 or MIP 450).
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 533  Epidemiology of Infectious Diseases/Zoonoses  Credits: 3 (2-0-1)
Also Offered As: VS 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Credit not allowed for both MIP 533 and VS 533. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 540  Biosafety in Research Laboratories  Credits: 2 (2-0-0)
Course Description: Practical applications of biosafety principles, including lab practices and regulatory aspects of research involving infectious microorganisms and rDNA.
Prerequisite: MIP 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 543  RNA Biology  Credits: 3 (3-0-0)
Course Description: Gene expression and regulation that occurs at the level of RNA (e.g., splicing, stability, export, translation, RNAi, etc.).
Prerequisite: BC 351, may be taken concurrently or BC 401, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
MIP 550 Microbial and Molecular Genetics Laboratory Credits: 4 (2-6-0)
Course Description: Use of both in vivo genetics and in vitro molecular techniques to study gene structure, function, and regulation in bacteria.
Prerequisite: MIP 302 and MIP 450.
Registration Information: Written consent of department required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 555 Principles and Mechanisms of Disease Credits: 3 (3-0-0)
Course Description: Principles of disease processes; emphasis on reactivity of the diseased cell, tissue, organ, or organism.
Prerequisite: BMS 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 563 Biology of Disease Vectors Credits: 3 (3-0-0)
Course Description: Vector physiology and genomics, new strategies in vector control, and vector/host interactions.
Prerequisite: MIP 462 or BSPM 462 or BZ 462.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 570 Functional Genomics Credits: 3 (2-2-0)
Course Description: State-of-the-art genomic tools with applications to studies of pathogenesis and pathophysiology of infectious diseases.
Prerequisite: MIP 300 and MIP 302 and MIP 443 and MIP 450.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 576 Bioinformatics Credits: 3 (3-0-0)
Also Offered As: BSPM 576.
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307.
Registration Information: Credit not allowed for both MIP 576 and BSPM 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 577 Computer Analysis in Population Genetics Credits: 2 (0-4-0)
Also Offered As: BZ 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: MIP 578, may be taken concurrently or BZ 578.
Registration Information: Credit not allowed for both MIP 577 and BZ 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 578 Genetics of Natural Populations Credits: 4 (3-0-1)
Also Offered As: BZ 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both MIP 578 and BZ 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 611 Advanced Microbiological Research Methods Credits: 4 (2-0-2)
Course Description: In-depth presentation of the ever-growing arsenal of techniques needed to be an effective experimental microbiologist/molecular biologist.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Must register for lecture and recitation.
Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 612 Applied Immunology Credits: 3 (3-0-0)
Course Description: Application of classic and modern principles in immunology currently being used in the medical, biotechnology and basic research fields.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 613 Applied Microbiology and Virology Credits: 4 (4-0-0)
Course Description: Application of bacteria, fungi and viruses in translational research, from drug and vaccine development to the generation of clean energy.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 614 Medical Microbiology Credits: 3 (3-0-0)
Course Description: In-depth examination of the pathogenic mechanisms of medically important bacteria, fungi, parasites and viruses.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 615 Ophthalmic Pathology Credit: 1 (1-0-0)
Course Description: Background in normal ocular histology as well as pathologic changes in the eye, taught through a combination of lectures and class discussions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 616 Modern Molecular Biology for Microbiologists Credits: 4 (3-0-1)
Course Description: Develop a working knowledge in the theory and applications of modern molecular biology to applied and translational research uses in microbiology.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 617 Principles of Biodefense/Emerging Pathogens Credits: 3 (3-0-0)
Course Description: In-depth analysis of the physiology, biology and epidemiology of biodefense agents and emerging pathogens.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 618 MIP Masters Seminar Series Credit: 1 (0-0-1)
Course Description: Foster the development of MIP master’s students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 619 MIP Masters Topics Credits: 2 (1-0-1)
Course Description: Foster the development of MIP master’s students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 624 Advanced Topics in Microbial Ecology Credits: 2 (1-0-1)
Course Description: Recent conceptual developments in microbial ecology, emphasizing theoretical aspects of microbial ecology, particularly in an evolutionary context.
Prerequisite: MIP 300 and MIP 432.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 628 Immunity to Infection Credits: 3 (3-0-0)
Course Description: How microorganisms have evolved to counteract the immune system and how the immune system has evolved to resist microbes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 630 Advances in Microbial Physiology Credits: 3 (3-0-0)
Course Description: Contemporary developments in bacterial structure, function, metabolism, and genetics.
Prerequisite: MIP 443.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 636 Mechanisms of Viral Infection and Disease Credits: 4 (3-0-1)
Course Description: Cytopathic mechanisms, pathogenetic events in viral diseases; host response and antiviral immunity; cancer induction by DNA and RNA viruses.
Prerequisite: MIP 420 or MIP 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 643 Grant Writing for Microbiology/Pathology Credit: 1 (1-0-0)
Course Description: To effectively communicate ideas, goals and approaches in a scientific grant proposal.
Prerequisite: None.
Registration Information: Enrollment in an MIP graduate program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 651 Immunobiology Credits: 3 (3-0-0)
Course Description: Structure, function, regulation of immunoglobulins and the immune system. Cellular immunity including transplantation and cancer.
Prerequisite: MIP 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 654 Research Policies and Regulations  Credit: 1 (1-0-0)
Course Description: Reviews CSU and federal policies, rules, and regulations on integrity, use of humans and animals, authorship, data, genetics, etc., using case studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 666 Writing Scientific Manuscripts  Credits: 3 (0-0-3)
Course Description: Writing biological science manuscripts for publication.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 670 Molecular Immunology and Immunogenetics  Credits: 3 (3-0-0)
Course Description: Molecular basis and genetics of immune response. Biochemistry of immunologically mediated diseases.
Prerequisite: MIP 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 675 Advanced Bioanalytic Pathology  Credits: 3 (3-0-0)
Course Description: Laboratory medicine for post-graduate veterinarians and professional veterinary medical students.
Prerequisite: VM 724.
Registration Information: Written consent of instructor or D.V.M. degree required.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 698 Research  Credits: Var[1-18] (0-0-0)
Course Description: Laboratories.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description: Individual research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 700 Topics in Microbiology  Credit: 1 (1-0-0)
Course Description: Current literature in bacteriology, virology, genetics, and immunology.
Prerequisite: MIP 300.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 720 Methods of Carbohydrate Analysis  Credits: 2 (1-3-0)
Course Description: Structural analysis of complex carbohydrates using gas chromatography, mass spectrometry, and nuclear magnetic resonance.
Prerequisite: CHEM 346.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MIP 740 Microbial and Molecular Genetics  Credits: 3 (2-0-1)
Course Description: Molecular biology and genetics of prokaryotic and eukaryotic cells and their viruses; strategies for genetic manipulation.
Prerequisite: MIP 450.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 750 Methods of Carbohydrate Analysis  Credits: 3 (1-3-0)
Course Description: In-depth, detailed study of general pathology and molecular mechanisms of disease. Help prepare students in the Anatomic and/or Clinical Pathology Residency prepare for the ACVP Board examination. Enhance the pathology knowledge and skills of Professional Veterinary Medicine students and graduate students in related disciplines.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 778 Pathobiology of Laboratory Animals  Credits: 3 (3-0-0)
Course Description: Unique natural biology and diseases of laboratory animal species emphasizing clinical, diagnostic, morphologic and clinical pathologic features.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 778A Practicum: Comparative Gross and Histologic Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 778B Practicum: Surgical Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 778C Practicum: Clinical Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 778D Practicum: Comparative Medicine  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 778E Seminar: Research/Graduate  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 784 Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786A Practicum: Comparative Gross and Histologic Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786B Practicum: Surgical Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786C Practicum: Clinical Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786D Practicum: Comparative Medicine  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 792B Seminar: Research/Faculty  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792C Seminar: Microscopic and Bioanalytic Pathology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792D Seminar: Anatomic Pathology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792E Seminar: Clinical Pathology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 795 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 796 Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Major in Microbiology

Microbiology is the study of organisms, many of which are too small to be seen with the naked eye, including fungi, protists, and bacteria, as well as acellular agents such as viruses and prions. Microbiology emerged as a distinct science in the late nineteenth century, with the discovery that microorganisms are the cause of many infectious diseases, and that they play essential roles in the ecosystem and in industrial processes. Much work in this field is directed toward the cure, control, or eradication of disease in humans and animals. Genetically engineered microorganisms can also be used for the production of improved foods and new medicines, as well as for removing toxic wastes and spills from the environment. More recently, some microbes have received considerable attention as potential agents of bioterrorism and biowarfare, and consequently much work is being done to counter such threats.

Students completing the undergraduate Microbiology degree program acquire knowledge and laboratory skills in the structure, physiology, genetics, pathogenicity, ecology, and taxonomy of microorganisms. Required courses in biological sciences, chemistry, physics, and mathematics support the major. Ample opportunities exist for undergraduates to obtain laboratory research experience and many student researchers have presented at conferences and have been awarded research grants or fellowships.

Effective Fall 2015

Freshman

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<th>Course</th>
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<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one from the following:

A Bachelor of Science degree in Microbiology positions graduates well for continued education in a professional or graduate degree program or for employment in the field.

Learning Outcomes

- **Core Knowledge**: Students will apply and integrate the fundamentals of chemistry, microbial biology, and biochemistry and key principles from the following five core areas of the discipline: immunology, bacteriology, virology, microbial physiology, and microbial genetics.
- **Relevance/Impact**: Students will demonstrate an awareness of issues at the forefront of the discipline and will evaluate the important interaction between microbes and society, from their beneficial use in industrial, biotechnological, and clinical applications to their role as etiologic agents of infectious disease in humans and animals.
- **Communication Skills**: Students will assimilate factual and conceptual information and effectively communicate disciplinary knowledge to both science literate and general audiences through written or verbal presentations.
- **Laboratory Skills**: Students will demonstrate proficiency using microbiological and immunological laboratory techniques employed in clinical, industrial, and research laboratories, and will be able to explain the principles behind the procedures, employ mathematical computations, properly execute the procedures, interpret the results correctly, and analyze the results to draw a conclusion.

Potential Occupations

The curriculum meets the requirements for entrance into most professional programs in veterinary and human medicine, and is ideal preparation for students desiring a career as a veterinarian, physician, physician assistant, pharmacist, medical laboratory scientist, optometrist, or dentist. The degree also prepares students for graduate (PhD or MS) studies in various biological sciences, and also provides students with the knowledge and skills to go directly into a career. Career opportunities will continue to grow because microbiology is at the center of complex issues facing our world today, as well as at the forefront of incredible innovation and development. Employment opportunities exist in biotechnology (pharmaceutical, food, beverage, and medical device industries); government public health agencies (CDC, FDA, and state and municipal health departments); and primary research institutions, such as universities.

For more information please visit the Department of Microbiology (http://csu-cvmbs.colostate.edu/academics/mip/undergraduate/Pages/default.aspx).

Requirements
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
<td>1B</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities</td>
<td>3B</td>
</tr>
<tr>
<td></td>
<td>Biology Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Microbiology Elective</td>
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<tr>
<td></td>
<td>Elective</td>
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**Sophomore**

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<thead>
<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td>3</td>
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<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>MIP 342</td>
<td>Immunology</td>
<td>4</td>
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<td></td>
<td>Select one from the following</td>
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</tr>
<tr>
<td>STAT 301</td>
<td>Introduction to Statistical Methods</td>
<td></td>
</tr>
<tr>
<td>STAT 307</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social and Behavioral Sciences</td>
<td>3C</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives</td>
<td>3D</td>
</tr>
<tr>
<td></td>
<td>Microbiology Elective</td>
<td>2</td>
</tr>
<tr>
<td></td>
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<td>3</td>
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**Junior**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Select one group from the following</td>
<td>10</td>
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<tr>
<td>Group A:</td>
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<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
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<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>Group B:</td>
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<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
<td>3A</td>
</tr>
<tr>
<td></td>
<td>Advanced Writing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td>3E</td>
</tr>
<tr>
<td></td>
<td>Microbiology Elective</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Electives</td>
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<tr>
<td></td>
<td><strong>Total Credits</strong></td>
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**Senior**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIP 351</td>
<td>Medical Bacteriology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one course from the following</td>
<td>2-3</td>
</tr>
<tr>
<td>MIP 400A</td>
<td>Capstone in Microbiology: Medical Microbiology</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 400B</td>
<td>Capstone in Microbiology: Biotechnology</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 400C</td>
<td>Capstone in Microbiology: Immunology</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 400D</td>
<td>Capstone in Microbiology: Microbial Diversity/Ecology</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 400E</td>
<td>Capstone in Microbiology: Microbial Genetics</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 400F</td>
<td>Capstone in Microbiology: Virology</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 400G</td>
<td>Capstone in Microbiology: Service Learning</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 498</td>
<td>Research</td>
<td>4C</td>
</tr>
<tr>
<td>MIP 420</td>
<td>Medical and Molecular Virology</td>
<td>4A</td>
</tr>
<tr>
<td>MIP 443</td>
<td>Microbial Physiology</td>
<td>4A</td>
</tr>
</tbody>
</table>
MIP 450  Microbial Genetics  3
Arts and Humanities  3B  3
Microbiology Electives\(^2\)  5
Electives\(^3\)  4-5

**Total Credits**  29

**Program Total Credits:**  120

1. Select three credits from approved list of Biology Electives in department.
2. Select from approved list of Microbiology Electives in department. Two chosen courses must be formal MIP courses with a laboratory component.
3. Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

**Major Completion Map**

**Distinctive Requirements for Degree Program:**

**To prepare for first semester:** The curriculum for the Microbiology major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. LIFE 102 requires high school chemistry as a prerequisite; CHEM 111 requires Algebra II as a prerequisite (this prerequisite is met by having Algebra II by test credit, transfer credit, or placement out of MATH 117 and MATH 118 on Math Placement Exam.

**Freshman**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Critical</th>
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</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Electives</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>MATH 124, MATH 125, MATH 126 must be completed by the end of Semester 1, if necessary.</td>
<td>X</td>
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</table>

**Total Credits**  15

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Critical</th>
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</thead>
<tbody>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
</tr>
</tbody>
</table>

Select one course from the following:

| MATH 155  | Calculus for Biological Scientists I (GT-MA1) | X |
| MATH 160  | Calculus for Physical Scientists I (GT-MA1) | X |

<table>
<thead>
<tr>
<th>Arts and Humanities</th>
<th>3B</th>
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</thead>
<tbody>
<tr>
<td>Biology Elective (See Department List)</td>
<td>3</td>
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<tr>
<td>Microbiology Elective (See Department List)</td>
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</table>

LIFE 102 must be completed by the end of Semester 2. X

**Total Credits**  16

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Critical</th>
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<tbody>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
</tr>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
</tr>
<tr>
<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
</tr>
</tbody>
</table>

Select one course from the following:

| STAT 301  | Introduction to Statistical Methods | X |
| STAT 307  | Introduction to Biostatistics | |

| Social and Behavioral Sciences | 3C |
| Electives | 3 |

**Total Credits**  17
### Semester 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>MIP 342</td>
<td>Immunology</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
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<tr>
<td></td>
<td>Historical Perspectives</td>
<td></td>
<td></td>
<td>3D</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Microbiology Elective with Lab (See Department List)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>MIP 343 is Recommended to fulfill the Microbiology Elective Lab Requirement.</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CO 150</td>
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Total Credits: 15

### Junior

#### Semester 5

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>BC 351</td>
<td>Principles of Biochemistry</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PH 121</td>
<td>General Physics I (GT-SC1)</td>
<td>X</td>
<td>X</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>PH 141</td>
<td>Physics for Scientists and Engineers I (GT-SC1)</td>
<td>X</td>
<td></td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Global and Cultural Awareness</td>
<td></td>
<td></td>
<td>3E</td>
<td>3</td>
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<td>Electives</td>
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<td>3</td>
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Total Credits: 15

### Semester 6

<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>PH 122</td>
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<td>X</td>
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<td>PH 142</td>
<td>Physics for Scientists and Engineers II (GT-SC1)</td>
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<td></td>
</tr>
<tr>
<td>Advanced Writing</td>
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<td></td>
</tr>
<tr>
<td>Microbiology Elective with Lab (See Department List)</td>
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<td>MIP 315</td>
<td>is Recommended to fulfill the Microbiology Elective Requirement.</td>
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Total Credits: 13

### Senior

#### Semester 7

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<th>Credits</th>
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<tr>
<td>MIP 420</td>
<td>Medical and Molecular Virology</td>
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<td>4</td>
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<tr>
<td>MIP 450</td>
<td>Microbial Genetics</td>
<td>X</td>
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<tr>
<td>MIP 400A</td>
<td>Capstone in Microbiology: Medical Microbiology</td>
<td></td>
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<td>4C</td>
<td>2</td>
</tr>
<tr>
<td>MIP 400B</td>
<td>Capstone in Microbiology: Biotechnology</td>
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<td>MIP 400C</td>
<td>Capstone in Microbiology: Immunology</td>
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<td>4C</td>
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</tr>
<tr>
<td>MIP 400D</td>
<td>Capstone in Microbiology: Microbial Diversity/Ecology</td>
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<td>Capstone in Microbiology: Microbial Genetics</td>
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<tr>
<td>MIP 400F</td>
<td>Capstone in Microbiology: Virology</td>
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<td>4C</td>
<td></td>
</tr>
<tr>
<td>MIP 400G</td>
<td>Capstone in Microbiology: Service Learning</td>
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<td>4C</td>
<td></td>
</tr>
<tr>
<td>MIP 498</td>
<td>Research</td>
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<td>4C</td>
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<tr>
<td>Arts and Humanities</td>
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<td>Electives</td>
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Total Credits: 14

#### Semester 8

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<td>4B</td>
<td>3</td>
</tr>
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<td>MIP 443</td>
<td>Microbial Physiology</td>
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<td></td>
<td>4A</td>
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</tr>
<tr>
<td>Microbiology Elective with Lab (See Department List)</td>
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<td></td>
<td>5</td>
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</table>

Total Credits: 14
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.

## Minor in Microbiology

A minor in Microbiology will be of considerable benefit to students majoring in biological science, natural science, food science, biochemistry, some fields of engineering, and other science-related fields.

### Requirements

#### Effective Spring 2015

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

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<th>Code</th>
<th>Title</th>
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</tr>
<tr>
<td>MIP 300</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MIP 302</td>
<td>General Microbiology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>MIP 342</td>
<td>Immunology</td>
<td>4</td>
</tr>
<tr>
<td><strong>Selected Courses (select a minimum of 12 credits from the following lists)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select at least one from the following:</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>MIP 351</td>
<td>Medical Bacteriology</td>
<td></td>
</tr>
<tr>
<td>MIP 420</td>
<td>Medical and Molecular Virology</td>
<td></td>
</tr>
<tr>
<td>Select at least one from the following:</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>MIP 443</td>
<td>Microbial Physiology</td>
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</tr>
<tr>
<td>MIP 450</td>
<td>Microbial Genetics</td>
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</tr>
<tr>
<td>Select 4-6 credits not taken above, including one laboratory course, from the following:</td>
<td>4-6</td>
<td></td>
</tr>
<tr>
<td>MIP 334</td>
<td>Food Microbiology</td>
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</tr>
<tr>
<td>MIP 343</td>
<td>Immunology Laboratory</td>
<td></td>
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<tr>
<td>MIP 350</td>
<td>Microbial Diversity</td>
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</tr>
<tr>
<td>MIP 351</td>
<td>Medical Bacteriology</td>
<td></td>
</tr>
<tr>
<td>MIP 352</td>
<td>Medical Bacteriology Laboratory</td>
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</tr>
<tr>
<td>MIP 420</td>
<td>Medical and Molecular Virology</td>
<td></td>
</tr>
<tr>
<td>MIP 425</td>
<td>Virology and Cell Culture Laboratory</td>
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<tr>
<td>MIP 432</td>
<td>Microbial Ecology</td>
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<tr>
<td>MIP 436</td>
<td>Industrial Microbiology</td>
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</tr>
<tr>
<td>MIP 443</td>
<td>Microbial Physiology</td>
<td></td>
</tr>
<tr>
<td>MIP 450</td>
<td>Microbial Genetics</td>
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</tr>
<tr>
<td>MIP 462/</td>
<td>Parasitology and Vector Biology</td>
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<td>BZ 462/</td>
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<tr>
<td>BSPM 462</td>
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<tr>
<td>MIP 498</td>
<td>Research</td>
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</table>

**Total Credits** 21

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## Master of Science in Microbiology, Plan B

### Requirements

#### Effective Fall 2013

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<td>MIP 613</td>
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<td>MIP 654</td>
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**Total Credits** 30

A minimum of 30 credits are required to complete this program.

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1. Students must take MIP 618 twice for 1 credit each time, Fall and Spring semesters, for a program total of 2 credits.

2. Students must take MIP 619 twice for 2 credits each time, Fall and Spring semesters, for a program total of 4 credits.

A scholarly paper is required for this degree.

A minimum of 24 credits must be earned at CSU.
The Graduate and Professional Bulletin is designed to provide post baccalaureate students and prospective students with the information which is most essential. It is not a comprehensive source.

A complete listing of graduate programs and degrees may be found by visiting the Graduate School (http://graduateschool.colostate.edu/prospective-students/degrees.aspx).

The policies and procedures in the Graduate and Professional Bulletin apply to all graduate students, except for Doctor of Veterinary Medicine (DVM) students. The policies and procedures for DVM students are found at the DVM Student Resource Page (http://csu-cvmbs.colostate.edu/dvm-program/Pages/dvm-student-resources.aspx).

CSU reserves the right at any time, without notice, to change, modify, or cancel any course, program, procedure, policy, financial requirement, or disciplinary arrangement set forth in this catalog whenever, in its sole discretion, it determines such action to be appropriate. Furthermore, CSU will not be responsible for any failure to present or complete any course or program or to perform any other activity, function, or obligation mentioned in this catalog. Since changes may occur at any time, students must check the relevant website (as noted throughout this catalog). Changes can be found on the Catalog Updates page.

Functions and Organization of the Graduate School

The purpose of the Graduate School is to promote high quality education and specialized training and to further the scholarly research and creative artistry with which such education is intimately linked. The advanced study necessary for graduate degrees requires the discovery of new knowledge, the original application or adaptation of existing knowledge, or esthetic contribution to the culture. Accordingly, graduate students perform research or do artistic work. Similarly, the faculty who are responsible for graduate education are themselves researchers or artists whose responsibilities include the transmission of their own creative skills and abilities to their students. The graduate educational mission of CSU and the research/artistic mission of CSU complement and reinforce each other and go forward in mutual interdependence.

Through the offering of the best graduate education available, CSU seeks to provide the skills and training necessary to a rapidly changing society and also to provide the basis for individual gratification and fulfillment on the part of its graduates.

Graduate degrees are awarded by CSU as an overall institution. Accordingly, CSU has specified that certain academic practices and procedures shall apply to all graduate degrees regardless of the departments and colleges in which study is undertaken. As is the case in most quality universities, some consistency of requirements has been found desirable. The Graduate School is the unit which applies and administers these requirements.

This activity involves several discrete kinds of functions. First, the Graduate School monitors all students’ progress through the entire graduate career, from sending out preliminary information on admissions to graduation. It maintains student records on application, admission, credits earned, formal programs of study, academic standing, progress toward the degree, and graduation. Additionally, it provides a regular flow of information to students and faculty regarding these practices so that the necessary steps can be taken as easily and conveniently as possible.

The Graduate School maintains an active liaison with students both on matters of overall interest and at the level of individual concerns. The former typically involves close contact with the Graduate Student Council, the campus-wide organization of graduate students, or its officers. The latter centers around matters which particular students raise as specific single cases.

The Graduate School collects and maintains information on the condition of the graduate educational mission of CSU. It concerns itself with institution-wide policies and practices that may affect this condition and will implement particular arrangements or make recommendations to the Faculty Council as appropriate.

Formal student involvement in the Graduate School proceeds through the Graduate Student Council. The Student Council consists of one student representative and one alternate from each department offering programs leading to advanced degrees. The Council elects its own officers and nominates graduate students for memberships on Faculty Council and Graduate School committees.

Admissions Requirements and Procedures

- Application: U.S. Citizens or Permanent Residents
- Track II Admissions
- Plan C
- Application: International Students
- Language Requirements
- Application Deadline Dates for Graduate School and Financial Support
- Readmission
- Transfer of Graduate Credits from Other Institutions
- Credit for Graduate Courses Taken at CSU Prior to Admission to a Graduate Program
- Students of Veterinary Medicine
- Integrated Degree Program and Integrated Degree Programs Plus Admissions
- Sequential Degree Programs

CSU’s graduate admissions program is designed to foster excellence in scholarship and promote diversity within the student population while assuring equal opportunity to all applicants.

The ultimate criterion for admission is applicant potential for attaining an advanced degree at CSU. However, the resources of CSU are limited and not all applicants who possess this potential can be admitted. Thus, selection is made taking into account a range of factors: past academic performance as indicated by transcripts of formal collegiate work, degrees completed, standardized examination scores (for example, the Graduate Record Examination or Graduate Management Admission Test), geographic residence, leadership qualities, recommendations from qualified references, economic status, ethnic origin, and racial background.

CSU does not set quotas for people possessing particular ethnic, gender, or racial characteristics. However, the vitality of CSU and the quality...
of the educational experience to be enjoyed by all students depend in part on the existence of a diverse student population. Thus, CSU actively seeks applicants from many backgrounds and with diverse characteristics. The institution is committed to a truly heterogeneous University community.

Application: U.S. Citizens or Permanent Residents

Students apply online (http://admissions.colostate.edu/onlineapplication) with the Admissions graduate application.

The on-line application will be electronically submitted to the Office of Admissions and then forwarded to the appropriate academic departments. In addition to the on-line application, a non-refundable application fee must be electronically submitted.

The following must be sent directly to the department in which the applicant plans to study (see Directory of Departmental and Program Contact Persons (http://graduateschool.colostate.edu/prospective-students/degrees.aspx) for proper address).

1. One official transcript of all collegiate work completed post-high school. Additionally separate transcripts are not required for study abroad credits if the GPA and credits are recorded on the transcript of the university that sponsored the study abroad experience. CSU transcripts are not required. Training course transcripts from branches of the U.S. military that show credit received with neither grades nor degrees awarded are exempt from the transcript requirement.
2. Three letters of recommendation must be sent to the academic department to which you are applying. There is no standardized format unless specified by your department.
3. Any other information that individual departments may require of applicants to particular programs. Applicants are advised to contact the departments regarding additional application materials such as the GRE or GMAT.
4. Regardless of citizenship, applicants may be required to demonstrate proof of English language proficiency, if they do not have a degree from an institution where the primary language of instruction is English.

General deadlines for the receipt of complete applications are as follows: Fall Semester, April 1; Spring Semester, September 1; Summer Term, January 1. Please submit the on-line application and all supporting documents by the appropriate date. Note that individual departments may have earlier deadlines for certain programs. Please consult appropriate sections of this Bulletin or a department contact person. Applications completed later than these published deadlines may be considered depending on space and resources available. Late applications that cannot be considered will be updated by the Office of Admissions to a later semester or term. Except for Integrated Degree Program (IDP) Admissions, applications cannot be accepted more than fifteen months in advance of the term in which study is to begin.

Students who wish to be considered for fellowships, assistantships, or other forms of merit-or competency-based financial support may be subject to earlier deadlines. See Application for Financial Support.

The application fee is not refundable even if the application is withdrawn or admission denied, nor is it applied to tuition and fees if the applicant subsequently enrolls. The non-refundable application fee must be received by the Office of Admissions. Your application cannot be submitted until the fee is received.

Only persons with bachelor’s degrees from colleges or universities accredited by one of the major regional accrediting agencies are eligible to apply. Degrees from schools which do not possess overall, institutional accreditation or which have only specialized accreditation cannot be accepted. This policy does not apply to admission for combined degree programs (CDPs, see Sequential Degree Programs), however, CDP students must earn their bachelor’s degrees prior to, or concurrent with, the award of their graduate degrees.

An undergraduate grade point average of 3.000 (A = 4.000) is required by CSU regulation for admission.

The various departments may have requirements in addition to or more stringent than those of CSU. Higher undergraduate grade point averages may be required, specific GRE minimum scores may be specified, or GRE advanced tests may be required, for example. Once again, applicants are strongly urged to contact the department in which they intend to study.

CSU may waive its 3.000 minimum undergraduate grade point average requirement under unusual circumstances or if the applicant is applying through Track II Admissions (see below). Applicants must present strong countervailing evidence that successful completion of a degree program is likely. Examples of the kinds of evidence that might be considered are high scores on the GRE aptitude test, high scores on the GRE advanced test, excellent letters of recommendation, relevant professional experience, and other indicators of exceptional motivation and performance. A positive recommendation by the department is required in such cases. Some departments may waive their specific requirements under similarly unusual and compelling circumstances. However, they are not required to do so and many cannot, due to space and resource considerations.

Meeting the minimum CSU or department standards does not entitle an applicant to admission. Meeting such standards only insures consideration of the application. Since CSU cannot accommodate all who meet the minimum standards, it reserves the right to select individuals for admission on the basis of merit in such a way as to promote the best interests of CSU and the society as a whole and to maximize the potential for individual accomplishment.

Persons not seeking advanced degrees may be recommended for admission as non-degree students if space permits and if they meet the academic admission requirements. Advanced course work, research experience, teacher recertification, and specialized training are among the objectives of students requesting admission in this category.

Students who have not been admitted to graduate study but who take courses on some other basis have no assurance that such courses will be acceptable in a degree program. Credits taken prior to admission to Graduate School may be allowed, but acceptance of any courses in a graduate degree program is at the discretion of the student’s graduate committee and the Graduate School and will not be calculated in the student’s GPA.

Courses taken by CSU undergraduates may, under certain circumstances, be subsequently credited toward graduate degrees at CSU. Undergraduates who enroll in 500-level courses which are not applied toward the bachelor’s degree may request that an exclusion statement be placed on their academic records for no more than 9 credits. Students cannot exclude any courses below the 500 level under this policy. Courses
at the 600 level are automatically excluded from use for an undergraduate degree.

A written request for exclusion must be filed with the Degree and Transfer Evaluation Unit of the Registrar’s Office, Centennial Hall, Room 100, no later than the end of the schedule change period of the term in which the excluded course is taken, or for Integrated Degree Program (IDP) students, excluded courses must appear on the formal program of study (GS form 6) filed during the first semester after Graduate School admission.

Permission to exclude courses from the bachelor’s degree does not assure acceptance of this credit toward a graduate degree program. Both departmental and Graduate School approval is required at the time of filing the formal program of study.

Those with bachelor’s or advanced degrees who desire to complete requirements for certification as teacher, administrator, counselor, reading specialist, or vocational certification must contact the School of Education. Individuals seeking professional certification in other areas must contact the departments concerned.

The submission of any false information or fraudulent documents in connection with the application process is grounds for rejection of the application or dismissal from the Graduate School regardless of the nature of other credentials.

Track II Admissions

Track II admissions are available only to individuals who have at least five years of appropriate professional experience following the award of a baccalaureate degree and whose undergraduate GPA is below 3.000.

The on-line application will be electronically submitted to the Office of Admissions and then forwarded to the appropriate academic departments. In addition to the on-line application and the $50 non-refundable application fee that must be submitted, the following must be sent directly to the department in which the student plans to study (refer to the addresses in the Directory for Department and Program Contact Persons (http://graduateschool.colostate.edu/prospective-students.degrees.aspx)).

1. One official transcript of all collegiate work completed (CSU transcripts are not required). Training course transcripts from branches of the U.S. military that show credit received with neither grades nor degrees awarded are exempt from the transcript requirement.

2. Three letters of recommendation written by individuals in at least two of the following categories:
   a. Applicant’s previous or current college/university instructors.
   b. Applicant’s previous or current, immediate professional supervisors.
   c. Observers, other than supervisors, who can verify the specific impact of the applicant’s professional or intellectual expertise. Letters from friends, relatives, or character witnesses will be considered only supplemental to the three required references.

3. A written “statement of purpose” that contains:
   a. A summary of long-term professional or personal goals.
   b. A statement regarding the applicant’s educational goals.
   c. A statement indicating how this learning will contribute to the applicant’s long-term goals.

4. A completed resume that contains the following:
   a. Record of all collegiate work, including names of institutions, periods of attendance, and degrees earned.
   b. Record of all professional employment including dates of service (including military).
   c. List of any special skills or competencies (including certifications or licensures).
   d. List of publications, exhibitions, prizes, awards, or other recognitions.
   e. List of service activities (including community and charitable).

Plan C

Applicants to Plan C master’s programs should consult department requirements for submission of standardized test scores.

Application: International Students

Application procedures are similar to those for U.S. citizens or permanent resident students. Refer to U.S. Citizens or Permanent Residents information for instructions.

The following materials must be sent directly to the department in which the applicant plans to study (see Programs and Degrees webpage (http://graduateschool.colostate.edu/prospective-students.degrees.aspx) for the mailing address).

1. An official transcript of all collegiate work completed along with a certified translation into English.
2. A statement of purpose.
3. Three letters of recommendation.
4. Scores on the Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS), or Pearson Test of English (PTE) Academic. Integrated Degree Program (IDP) Admissions are not required to take the TOEFL, IELTS exam or the PTE Academic exam.

   a. When the CSU graduate degree program is taught in the student’s native language, the TOEFL, IELTS, or the PTE Academic requirement will be waived.
   b. Students are exempted from the TOEFL, IELTS, or PTE Academic requirement if the official language of their country is English or if they have recently earned a degree at an American university.

Required items for Immigration Document Insurance

These items are not required for the application review process, but will be required if officially admitted. The following materials must be sent directly to the department in which the applicant plans to study (see Programs and Degrees webpage (http://graduateschool.colostate.edu/prospective-students.degrees.aspx) for the mailing address).

1. Certified proof of financial support – Graduate Student Certification for Issuance of Immigration Document (GS3F form) and supporting financial documents.
2. Passport copy

Departmental requirements for additional materials such as standardized tests (e.g. GRE or GMAT) are the same as for U.S. students. Regulations
regarding deadlines and application fees are likewise the same as for U.S. students.

Information on application deadlines and application fees is contained in the U.S. Citizens or Permanent Residents section.

The U.S. Bureau of Citizenship and Immigration Services requires CSU to have proof of financial support before immigration documentation can be issued. Immigration documentation is needed to obtain a visa. All international students and their accompanying dependents are required to maintain adequate health insurance during their stay at CSU.

Only persons with degrees equivalent to U.S. bachelor’s degrees are qualified to apply for admission except for Integrated Degree Program (IDP) applicants described above. Further, it is a CSU regulation that international applicants should be among the top students in their classes.

CSU requires that proficiency in English language be demonstrated either by the TOEFL, IELTS, or PTE Academic tests prior to admissions. The minimum TOEFL score for admission without condition is 550 (paper-based), or 80 (internet-based). The minimum IELTS score for admission without condition is 6.5. The minimum PTE Academic Score for admission without condition is 58. Official scores, taken within two years prior to admission, must be submitted directly from the testing agency.

To be considered for conditional admission, a student must have a minimum TOEFL score or 475 on the paper based test or 50 on the internet based test or minimum IELTS score of 5.5 or PTE scores from 40-57. After receiving conditional admission, the student must satisfactorily complete the INTO CSU Academic English Program. Enrollment in regular CSU academic courses is at the discretion of the INTO CSU Academic English Program. Approval of both the department and the Dean of the Graduate School is necessary for such conditional admission.

Generally, however, applicants should achieve satisfactory TOEFL, IELTS or PTE Academic scores before arriving on the CSU campus.

The individual departments may have requirements or standards in addition to or more stringent than those of CSU. Students must contact the department in which they intend to study for additional information. Consult the Department Head or Program Contact Persons for the proper addresses.

The paragraphs in the preceding section on U.S. Citizens or Permanent Residents on academic requirements, how students are selected for admission, non-degree study, previous undergraduate work at Colorado State, certification, and the consequences of presenting any materials that are not genuine, also apply to international students.

Language Requirements

English is the language of instruction at CSU. Adequate knowledge of that language is expected. The various departments generally evaluate students in this regard, and they may require students to secure remedial instruction if necessary.

Students whose native language is not English must demonstrate capability through the TOEFL examinations or other means (see above).

Some departments may require a knowledge of one or more foreign languages for advanced degrees. For information the student should contact the department.

### Application Deadline Dates for Graduate School and Financial Support

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<th>Term</th>
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<th>Applying to Graduate School and Financial Support</th>
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<td>Fall</td>
<td>April 1st</td>
<td>February 15th</td>
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<tr>
<td>Spring</td>
<td>September 1st</td>
<td>July 15th</td>
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<tr>
<td>Summer</td>
<td>January 1st</td>
<td>November 15th</td>
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### Personal Identifier/Social Security Number

The personal identifier for all CSU students is the CSUID. The CSUID is a nine-digit unique numeric identifier that begins with the digit 8 and is assigned by the ARIES student information system. The Social Security number (SSN) is no longer used at CSU as a personal identifier.

All students are requested to submit a Social Security number (SSN) at the time of admission or before initial enrollment at CSU. The Social Security number is maintained as a secure data element in the student information system and is not accessible as directory information or to unauthorized persons. International students are encouraged to file for a Social Security number although they are not eligible for Social Security benefits. Students’ disclosure of the social security number is required for financial aid purposes, employment, and state and federal reports required by law.

The Social Security number is released to agencies or individuals outside CSU only at the request of the student or in accordance with federal and state requirements in regard to financial aid awards; Internal Revenue Service for student employee salary reporting and 1098T/1098E reporting; and State Controller’s debt collection procedure. CSU has strict policies protecting and prohibiting the use of SSN and uses every reasonable effort to hide and protect SSN.

### Readmission

If there is an interruption in successive semester-to-semester on-campus resident instruction registration, enrollment will lapse and you will need to reapply. File GS Form 1B to apply for readmission at least two months prior to the term that you plan to return. A check or money order for $150.00 must accompany the GS Form 1B.

Please note that registration through Continuing Education (CSU Online), Guest Registration, Alternate Site, or an off-campus instruction mode (including Distance Degree) does not constitute readmission.

The GS Form 1B (http://graduateschool.colostate.edu/documents/GS1B.pdf) is available online.

### Transfer of Graduate Credit from Other Institutions

Credit may be transferred to a graduate program at CSU with the approval of advisor, committee, and Graduate School. There is no right to transfer credits; each case is assessed individually and accepted or rejected on its merits. The number of credits that may be transferred is limited. See requirements for the number of credits that may be earned at CSU after...
admission to the Graduate School under the descriptions of the various degree programs and in Credit Requirements section.

Individual credits used to fulfill requirements for previously earned degrees are not accepted in transfer.

Requests to transfer graduate credit earned at another university must be accompanied by official transcripts. Courses accepted for transfer must be at the equivalent level of CSU’s regular courses at the 500 level or above. Arrangements for transfer of credit are made when the program of study is submitted (see Program of Study). In general, credits transferred must be part of a graduate curriculum. However, credits that are part of a post baccalaureate professional curriculum in Medicine, Veterinary Medicine, Dentistry, Pharmacy, Law, or Divinity may be so transferred if they address the intellectual bases of a graduate discipline.

Credits earned at institutions not accredited by one of the major regional accrediting agencies are not acceptable for transfer; except that a CSU academic department may petition the Graduate School to have graduate level credits earned from a foreign institution accepted as transfer credit. Grades in courses accepted for transfer will not be included in calculation of the grade point average. No course will be accepted for transfer with a grade less than B.

CSU may establish bilateral cooperative agreements with other institutions within the Colorado State University System (CSU-Pueblo (http://www.csupueblo.edu/Pages/default.aspx) and CSU-Global (https://csuglobal.edu)) that permit transfer to CSU of up to half of the total required credits for a specific master’s degree.

Procedures
1. Any bilateral agreement must be formal, proposed by an academic department, signed by the Provost/Academic Vice-President, and approved by the Committee on Scholarship, Research and Graduate Education (COSRGE). It must refer to a particular named master’s degree now offered by CSU.
2. Courses offered for transfer under these arrangements must be:
   a. The exact equivalents of particular courses at CSU and so certified by the Faculty Council Curriculum Committee.
   b. Taught by persons who are Faculty or Affiliate Faculty of CSU.
3. Persons who seek to avail themselves of such transfer privileges must be admitted to graduate school at CSU. No more than nine credits offered for transfer may be earned prior to such admission. This means that students must apply for and secure admission well in advance of actual transfer to CSU.
4. Persons who transfer credits under such a bilateral agreement may also transfer credits under the normal procedures as described in this Bulletin. Such transfers may not exceed six credits and the total number of transferred credits, under bilateral agreement and normal procedure combined, may not exceed half the total required for the master’s program.
5. Credits submitted or transferred under such special agreements must be earned by a person enrolled as either a graduate student or a post baccalaureate student at the cooperating institution. Credits earned prior to the award of a bachelor’s degree or those used to fulfill requirements for a previously earned degree are not accepted.
6. Additional regulations and restrictions as described in this Bulletin under the section Transfer of Graduate Credit from Other Institutions also apply to bilateral agreement transfers.

Credit for Graduate Courses Taken at CSU Prior to Admission to a Graduate Program

Certain CSU courses taken after receipt of a bachelor’s degree but prior to formal admission to a graduate program may contribute to graduate degree requirements (see Credit Requirements for the degree pursuing). Grades earned in such courses will not be included in the calculation of grade point averages. No such courses will be accepted, however, unless a grade of B or better has been earned.

Students of Veterinary Medicine

A student in the College of Veterinary Medicine and Biomedical Sciences who holds a bachelor’s degree and who meets the requirements for admission to the Graduate School may pursue work concurrently toward the degrees of Doctor of Veterinary Medicine and Master of Science if approved in advance by the Dean of the College of Veterinary Medicine and Biomedical Sciences and the Dean of the Graduate School. Credits applied on one degree may not be used in meeting requirements for the other. Refer to the Doctor of Veterinary Medicine program (http://csu-cvmbs.colostate.edu/dvm-program/Pages/default.aspx) or the Graduate School (http://www.graduateschool.colostate.edu) for more information.

Integrated Degree Program and Integrated Degree Programs Plus Admissions

Exceptional undergraduate students may be recruited to integrated bachelor’s/master’s or bachelor’s/doctoral degree programs (IDPs). An IDP partners an undergraduate and graduate program within or between departments, programs, or SAUs in the same or differing colleges. The graduate degree will be awarded after or concurrently with the award of the Baccalaureate degree. There are two types of IDPs:

1. The IDP is for undergraduate programs that have a 120 degree credit requirement;
2. The IDP is for undergraduate programs that have a 121, or more, degree credit requirement.

Undergraduates enrolled in a bachelor’s degree program at CSU may apply for admission to the appropriate IDP program if they meet the following criteria students must:

1. Complete at least 90 credits of course work toward their first bachelor’s degree.
   a. Students enrolled in IDP programs may double count one through nine 500-level credits toward both their bachelor’s/master’s or their bachelor’s/PhD degrees when the credit requirements for the undergraduate degree programs range respectively between 121 through 129 credits, or more. For example, a maximum of 5 credits could be double counted for a 125-credit degree and a maximum of 9 credits could be double counted for a degree program with 129 or more credits. (This process is managed by the Registrar’s Office; the maximum number of credits that may be double counted is 9.)
   b. Students enrolled in an IDP may not double count credits.

However, prior to earning 120 credits, these students may enroll for a maximum of nine credits of graduate-level course work that may be applied toward the graduate degree, provided such course work is not used to meet bachelor’s degree requirements. As
undergraduates, students pay the undergraduate tuition rate for these credits. (This process is managed by the Registrar’s Office.)

2. Complete or enroll in 9 credits of upper division level courses required or listed within their majors by their senior year.

3. Maintain a cumulative GPA of 3.000 or above.

In addition to the on-line application and the application processing fee, students applying for admission to either IDP program must send the following materials directly to the department in which they plan to study:

1. Three letters of recommendation written by individuals in each of the following categories:
   a. Applicant’s undergraduate advisor.
   b. Applicant’s instructor in at least one course within his or her major who is not his or her advisor.
   c. Applicant’s instructor in a course outside of his or her major field of study.

2. A written “statement of purpose” that contains:
   a. A summary of long-term professional or personal goals.
   b. A statement regarding the applicant’s educational goals.
   c. A statement indicating how participating in the Track III degree program will contribute to the applicant’s long-term goals.

3. A completed resume that contains the following:
   a. Record of all professional employment including dates of service (including military).
   b. List of any special skills or competencies (including certifications or licensures).
   c. List of publications, exhibitions, prizes, awards, or other recognitions.
   d. List of service activities (including community and charitable).

To be eligible to offer an IDP or IDP+, a specific program must submit, and have approved by the Graduate School, a one-time Memorandum of Understanding (MOU) providing the following information and agreements. Contact the Graduate School for the MOU format.

1. List participating undergraduate and graduate program codes.
2. All students recommended will have a GPA of 3.0 or higher.
3. 21 credits must be earned after admission to the Graduate School for a master’s degree and 62 credits for a PhD.
4. Students will be advised of the following:
   a. The semester after the students have earned 120 or more credits at the undergraduate level the student will be switched to graduate standing and will begin paying graduate tuition and fees. They will lose all undergraduate institutional and scholarship aid such as Pell, COF and Boettcher awards.
   b. Their Undergraduate Degree Plans (DARS) will no longer track the credits required by the undergraduate degree program. These credits must be transferred to the graduate degree, provided such course work is not used to meet bachelor’s degree requirements. As undergraduates, students pay the undergraduate tuition rate for these credits. (This process is managed by the Registrar’s Office.)
5. Students must file their programs of study (GS form 6) by the end of the second week of the first semester after Graduate School admission.
6. Students who are dismissed or drop out from the Graduate School, and who are still in good standing within their undergraduate programs, will be permitted to complete their undergraduate degrees.

Students will be required to make contact with the Graduate School for the next steps to reivate their undergraduate status. To support undergraduate degree conferal for students who do not complete the IDP/IDP+, departments must submit an explicit plan for undergraduates showing how they will allow students to graduate if they have completed: 1) All non-elective courses required for that undergraduate degree, and 2) The minimum number of undergraduate credits required by the undergraduate degree program. These credits may consist of both graduate and undergraduate coursework. The graduation process may require additional paperwork with the Registrar’s Office.

7. Students must complete applications for graduation (GS25) from the Graduate School either concurrently with, or subsequent to, completing the bachelor’s degrees.

Departments offering IDP programs with unique requirements, incentives or other elements in addition to, or instead of, those stated above must request approval from the Graduate School for the specific terms they wish to address. The final terms of the agreement will be stipulated in an MOU between the Graduate School and the Department.

Sequential Degree Programs

Sequential degree programs (SDPs) partner an undergraduate and a graduate program within or between departments, programs, or SAUs in the same or differing colleges. The graduate degree will be awarded only after the award of the Baccalaureate degree. Undergraduate students complete a SDP application created by the partnering undergraduate and graduate programs. The timing of the application and its requirements are defined by the partnering programs and include minimum requirements related to criteria such as GRE, recommendations, and research experience. The minimum GPA acceptable for entrance into a SDP is 3.00. Students may be contingently admitted into the SDP at any point the partnering programs of the SDP so choose. Students must complete the Graduate School application and the application fee. Final admission to the SDP is conferred when the students meet the minimum SDP and Graduate School admissions criteria upon completion of their bachelor’s degrees. To be eligible to offer a SDP, a specific program must submit, and have approved by the Graduate School, a one-time Memorandum of Understanding (MOU)\(^1\). The minimum requirements for contingent graduate admission into the SDP must be included in the MOU.

Undergraduate students in SDPs may enroll for a maximum of nine credits of graduate-level course work that may be applied toward the graduate degree, provided such course work is not used to meet bachelor’s degree requirements. As undergraduates, students pay the undergraduate tuition rate for these credits. (This process is managed by the Registrar’s Office.)

\(^1\) Departments offering SDP programs with unique requirements, incentives or other elements in addition to, or instead of, those stated above must request approval from the Graduate School for the specific terms they wish to address. The final terms of the agreement will be stipulated in an MOU between the Graduate School and the Department.

Graduate Study

- Requirements for All Graduate Degrees
The earning of a graduate degree is a wide-ranging, challenging intellectual experience. It certainly involves mastery of important subject matter. It may require the possession of knowledge in addition to that acquired through course work and also the ability to creatively synthesize and interpret that knowledge. Further, research or artistic projects are often an integral part of graduate study as may be field responsibilities or service obligations. Since graduate work thus extends beyond completion of course work in several ways, it is often the case that some form of culminating event, be it comprehensive examination, thesis, or other undertaking is part of the degree program.

Requirements for All Graduate Degrees

- The Advisory System
- Program of Study
- Scholastic Standards
- Diagnostic Examination
- Final Examinations
- Time Limit
- Continuous Registration
- Graduate Enrollment Requirement
- Posthumous Degree

The graduate experience, involving as many dimensions as it does, requires careful and comprehensive planning. This planning is done by the student, the advisor, and the graduate committee. Of course, it should take place early in the graduate career. The necessity for planning underlies the advisory system, the limitation on the number of credits that may be transferred, and requirements that certain amounts of the work in any degree program must be completed at CSU after admission to the Graduate School. These are all explained below.

Comprehensive planning assures that the greatest possible benefit will be gained from graduate study. Depending on discipline, career objectives, and particular curricular needs, unique study plans may be arranged for students on an individual basis.

Just as the scope of activities involved in earning a graduate degree is extensive and complex, so is the necessary evaluation of student performance. Students must not only demonstrate the ability to earn satisfactory grades in their courses, but must also show that they possess those more elaborate abilities and skills essential to the various academic and professional fields. The advisor and graduate committee have the primary responsibility for assessing these broader dimensions of student progress.

The requirements set forward in this section are those of CSU as a whole. However, the various programs may have additional requirements not listed here. These requirements must also be met in completing a degree. Please consult the department for appropriate information. See the Areas of Study within the Graduate Degrees (http://graduateschool.colostate.edu/prospective-students/degrees.aspx) section in the Graduate School website.

Summary of Procedures for the Master’s and Doctor of Philosophy Degrees

NOTE: Each semester the Graduate School publishes a schedule of deadlines. Deadlines are available on the Graduate School website. Students should consult this schedule whenever they approach important steps in their careers.

<table>
<thead>
<tr>
<th>Step</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Application for admission (online)</td>
<td>Six months before first registration</td>
</tr>
<tr>
<td>2. Diagnostic examination when required</td>
<td>Before first registration</td>
</tr>
<tr>
<td>3. Appointment of advisor</td>
<td>Before first registration</td>
</tr>
<tr>
<td>4. Selection of graduate committee</td>
<td>Before the time of fourth regular semester registration</td>
</tr>
<tr>
<td>5. Filing of program of study (GS Form 6)</td>
<td>Before the time of fourth regular semester registration</td>
</tr>
<tr>
<td>6. Preliminary examination (Ph.D. only)</td>
<td>Two terms prior to final examination only</td>
</tr>
<tr>
<td>7. Report of preliminary examination (GS Form 16) - (Ph.D. only)</td>
<td>Within two working days after results are known</td>
</tr>
<tr>
<td>8. Changes in committee (GS Form 9A)</td>
<td>When change is made</td>
</tr>
<tr>
<td>9. Application for Graduation (GS Form 25)</td>
<td>Refer to published deadlines from the Graduate School Website</td>
</tr>
<tr>
<td>9a. Reapplication for Graduation (online)</td>
<td>Failure to graduate requires Reapplication for Graduation (online) for the next time term for which you are applying</td>
</tr>
<tr>
<td>10. Submit thesis to committee</td>
<td>Two weeks prior to examination</td>
</tr>
<tr>
<td>11. Final examination</td>
<td>Refer to published deadlines from the Graduate School Website</td>
</tr>
<tr>
<td>12. Report of final examination (GS Form 24)</td>
<td>Within two working days after results are known; refer to published deadlines from the Graduate School website</td>
</tr>
<tr>
<td>13. Submit a signed Thesis/Dissertation Submission From to the Graduate School and Submit the Survey of Earned Doctorates (Ph.D. only) prior to submitting the electronic thesis/dissertation</td>
<td>Refer to published deadlines from the Graduate School website.</td>
</tr>
<tr>
<td>14. Submit the thesis/dissertation electronically</td>
<td>Refer to published deadlines from the Graduate School website</td>
</tr>
<tr>
<td>15. Graduation</td>
<td>Ceremony information is available from the Graduate School website</td>
</tr>
</tbody>
</table>

Forms (http://graduateschool.colostate.edu/current-students/forms) are available online.

The Advisory System

Since thoughtful planning is vital to a graduate student career, a comprehensive arrangement for advising has been established. Each
student is initially assigned a faculty member as advisor by the head of the department in which the major is pursued.

A permanent advisor will be selected from among departmental faculty once initial entry to the program has been completed. (The temporary advisor may assume this role if appropriate.)

The advisor is the chief source of advice in the planning process. This individual works closely with the student throughout the graduate career on all matters related to the degree program.

A close, cordial, and professional relationship is therefore of the utmost importance. Both student and advisor should work at achieving mutual understanding and respect.

Except for those pursuing Plan C master's degrees, each student has an individual graduate advisory committee. Members of the committee should be chosen on the basis of the student's interests, the student's experience with faculty members, and the advisor's knowledge and expertise. The makeup of a graduate committee must be approved by the department head and, of course, agreed to by the potential members themselves. It is well for the student to assume the responsibility of securing these approvals and agreements.

The purpose of the committee is to make available to the student a broad range of knowledge and expertise. It aids in general advising of the student and assists in planning the major elements of the program. The committee also evaluates student progress throughout the graduate career. It may provide assessments at various stages and it administers the final examination. The committee is not responsible for reminding students of published deadlines or for monitoring procedural details. The student should manage such matters independently.

The committee must consist of at least three faculty members for a master's degree program and at least four for a doctoral degree program. The members are as follows:

1. The advisor who serves as chairperson of the committee and who must hold academic faculty rank as a professor, associate professor, or assistant professor of any appointment type within the department or program granting the degree;
2. One or more additional members from the department;
3. Any non-departmental faculty member who may be appropriate; and
4. One member from an outside department who, appointed by the Dean of the Graduate School, represents the Graduate School. The outside committee member appointed by the Dean of the Graduate School must hold a regular, special, transitional, joint, or emeritus/emerita faculty appointment at CSU. The outside member should serve as an impartial external evaluator on the committee, ensuring quality of scholarship and fairness in process.

Due to the interdisciplinary nature of some scholarship at CSU, potential conflicts of interest may not be avoidable but should be disclosed to the Dean of the Graduate School and managed as soon as they arise. Individuals who are not academic faculty but who have special expertise may serve on committees in addition to the prescribed members, but may not vote regarding examination results.

Plan C master's students are required to have an advisor but not a committee.

The advisor is identified and the committee is appointed through filing a GS Form 6 (http://graduateschool.colostate.edu/current-students/forms) with the Graduate School. It is the student's responsibility to identify an advisor and a committee, all of whom are willing and qualified to serve. The student's department chair or designee will use his/her best efforts to facilitate selection of the committee and subsequent changes therein. With notification, temporary replacement of a member may be arranged. A member, including the advisor, may resign from the committee in accordance with any applicable provisions in the student's departmental code. In such cases, the affected student and his or her department chair will be notified promptly by the departing member. It is then the student's responsibility to obtain a replacement. Any permanent changes are recorded through the filing of GS Form 9A (http://graduateschool.colostate.edu/current-students/forms) with the Graduate School.

Persons who are not academic faculty (as defined in the Academic Faculty and Administrative Professional Manual (http://facultycouncil.colostate.edu/faculty-manual)) of CSU may be appointed full voting members of graduate student advisory committees in the following manner. A person may be nominated for membership on a specific student’s committee. This is accomplished by submission of a resume and supporting material to the department head. If, using procedures and criteria outlined in the departmental code, the department head judges the appointment appropriate, and shall forward a recommendation and all supporting materials to the Dean of the Graduate School. The Dean of the Graduate School shall bring the nomination to the appropriate Faculty Council Committee, which shall act on the nomination.

A person so approved shall be eligible to serve on the committee for the duration of the student’s work toward the degree. The Graduate School shall maintain a roster of such appointments. Although approval is granted with respect to a particular student’s committee, such members may serve on other student committees in the same department with additional departmental approval provided that such service shall not extend beyond five years of the original appointment.

Such non-faculty appointments are subject to the following restrictions.

1. Such an appointee may not serve as an outside member of graduate committees.
2. Service may not be as the sole advisor of the student.
3. The appointee must have a degree equivalent to that sought by the student and must not be a student at CSU.
4. No more than one such person may serve on any graduate student’s committee.
5. The person appointed should be an addition to the minimum number now required on graduate committees and not a replacement for required faculty. The advisor may invite others to participate in the examination in a nonvoting, advisory capacity.

**Program of Study**

Each student must prepare a Program of Study, a document which lists all courses taken in pursuit of the degree. This is the formal statement of what is done to achieve the degree, the summary of all academic planning. The advisor and the committee are heavily involved in the development of the Program of Study. The Program of Study must be filed with the Graduate School before the time of the fourth regular semester registration. Students who fail to meet this requirement may be denied subsequent registration. For Integrated Degree Program (IDP) Admission students, program of study forms (GS Form 6 (http://graduateschool.colostate.edu/current-students/forms)) must be filed by the end of the second week of the students’ first semester after admission to Graduate School. Courses listed and
approved on this form for graduate requirements will be automatically excluded from the undergraduate degree program of the student. The Graduate School reviews each program of study (GS Form 6 (http://graduateschool.colostate.edu/current-students/forms)) and determines whether the program of study conforms to University policy. That is, an early graduation check is performed. Problems are reported to students so that they can be corrected at an early date.

While it is important to plan the Program of Study early in the graduate career, it is not necessarily permanently fixed. Plans may develop and change. Modifications must be formally recorded, however, and the advisor, department head, and the Graduate School must approve. Courses which have been taken and for which a grade has been received (A through F, I, S or U) may not be removed from the Program of Study. Changes in program of study or committee membership should be made with extreme care since no additional comprehensive checks are made until the time of graduation.

The Program of Study is submitted on GS Form 6; any changes are recorded on GS Form 25 (http://graduateschool.colostate.edu/current-students/forms), Application for Graduation.

**Scholastic Standards**

To meet the requirements for graduation and to remain in good academic standing, a student must demonstrate acceptable performance in course work after being admitted to a graduate program. This requires a cumulative 3.00 grade point average in all regular course work. Regular course work is defined as courses other than independent or group studies, research courses, open seminars, thesis/dissertation credits, study abroad, U.S. travel, supervised college teaching, student teaching, practicum, internship, field placement, unique title courses offered through Continuing Education (CSU Online), and any courses graded pass/fail. Overall a 3.000 grade point average must be maintained in regular and non-regular courses graded traditionally (A through F). The grade point average in required courses included on the approved program of study (GS Form 6) must also equal at least 3.000.

In addition, good academic standing requires satisfactory progress in the overall graduate program. Students’ individual graduate advisory committees may render judgments as to whether satisfactory progress is being made toward the degree, taking into account all aspects of academic performance and promise, not necessarily coursework alone. A positive judgment is required to remain in good academic standing.

Failure to maintain good academic standing due to a cumulative grade point average less than 3.00 results in being placed on academic probation. (New regularly admitted students will not be placed on probation until they have completed 12 regular credits or two semesters of graduate work, whichever comes first.) The probationary period extends for one semester beyond the one in which this status is acquired. During this probationary period, the student must register for traditionally graded courses that affect the grade point average.

With permission of the student’s advisory committee, the student may register for continuous registration instead of traditionally graded courses. Continuous registration may be used to extend the probationary period for a maximum of two semesters, after which traditionally graded courses must be taken. Students on probation are subject to dismissal by the academic department or the Dean of the Graduate School at the end of the probationary semester unless good academic standing has been regained. This requires adequate improvement in cumulative grade point averages (3.000) and/or satisfactory progress as determined by the student’s graduate advisory committee. Students not making satisfactory progress due to their grade point average are encouraged to contact their advisors and/or advisory committees in order to set up a meeting to create a progress plan. Integrated Degree Program (IDP) students in combined bachelor’s/master’s degree programs who have accumulated at least 120 credit hours of course work and who fail to maintain a 3.00 GPA in their graduate course work including any courses listed on their GS 6 Form will be placed on probation by the Graduate School and will have one semester in which to improve their cumulative grade point averages to no less than 3.000 in their graduate course work. Failure to bring the cumulative graduate GPA to at least 3.00 will result in dismissal from the Graduate School with no re-enrollment permitted prior to completion of the bachelor’s degree. IDP students who are dismissed from the Graduate School, and who are still in good standing within their undergraduate programs, will be permitted to complete their undergraduate degrees. These students can petition the Registrar to reinstate courses to be applied toward their undergraduate degrees.

When a student’s graduate advisory committee or an appropriate departmental graduate committee finds that a student is not making satisfactory progress toward the degree due to factors other than grade point average, and that satisfactory progress cannot be anticipated, a plan should be created and the following steps should be taken.

1. Inform the student of the concerns, create a progress plan with the student, develop a timeline and inform the student of the potential consequences (dismissal) if the progress is not satisfactory.

2. The committee should keep in contact with the student to give feedback during the progress plan timeline and document such contacts and their outcomes.

3. At the end of the timeline, if progress is not adequate, the committee may recommend dismissal from the program. The recommendation goes to the Department Head and the Dean of the Graduate School and should include documentation on the steps taken with justification for this action.

The recommendation must be referred to the Department Head for approval and the Dean of the Graduate School for final action. The student may appeal such an immediate dismissal through the existing Graduate School appeals procedure. Departments which invoke this process must have published guidelines explaining the performance indicators which lead to immediate dismissals.

Grades of C or higher must be earned in all required courses on a Program of Study. D grades may be accepted in background courses, but such courses must be included in the computation of the cumulative grade point average. Graduate students may take 100 and 200 level courses for general enlightenment or to satisfy a background requirement. These course are not to be included in the student’s program of study, and grades earned in such courses will not be considered in computing the graduate grade point averages described above. Once admitted to a graduate program, grades earned in courses
300 level and above will be considered in computing the graduate GPA. Standards and requirements for off-campus graduate study are the same as those standards and requirements on campus. The academic department head has the basic responsibility for the implementation of this policy. Note that only courses with a grade of B or better may be accepted as transfer courses and such courses are not included in the student’s calculation of grade point averages.

For thesis, dissertation, research, and independent study graduate courses, the number of student credit hours earned will be determined using a base rate of 48 hours of student effort per credit hour. The faculty advisor, or other department official, shall estimate the total number of hours of student effort required over the length of the semester. This effort shall include consultation with the advisor, as well as library, laboratory, field, or studio work. The total number of hours shall be divided by 48 and the resultant quotient (rounded off to a whole number) shall define the number of credits to be awarded.

**Diagnostic Examination**

A diagnostic examination is administered by a number of departments before the first registration to determine the areas in which there may be inadequate preparation. Results from the diagnostic examination are used in planning remedial course work when needed and in preparing the Program of Study (GS Form 6 (http://graduateschool.colostate.edu/current-students/forms)).

**Final Examinations**

Each candidate for a degree, except for Plan C master’s students, must pass a final examination which must be held by the published deadlines of the student’s graduating term. The examining committee is normally the student’s graduate committee with the advisor serving as chairperson. If a department chooses to administer a common examination to its Plan B master’s candidates, a departmental examining committee may serve this function. Plans and arrangements for a common final examination for Plan B candidates must be on file with the Graduate School in advance of the examining date.

Voting at all final oral examinations shall be limited to the members of the student’s committee, and a majority vote is necessary to pass the examination. A tie vote is interpreted as failure to pass the examination. Committee members who are not academic faculty do not have a vote on the final examination.

Providing the committee approves, a candidate who fails the final examination may be reexamined once and, for the reexamination, may be required to complete further work. The reexamination must be held no later than 12 months after the first examination. The examination must not be held earlier than two months after the first examination unless the student agrees to a shorter time period. Failure to pass the second exam results in dismissal from the Graduate School.

The student is responsible for taking the Report of Final Examination (GS Form 24 (http://graduateschool.colostate.edu/current-students/forms)) to the examination and returning it, completed and signed, to the Graduate School Office within two working days after results are known; this must be by the published deadline of the student’s graduating term.

Participation in oral examinations by the student and/or one or more members of the examining committee may be via electronic link so long as all are participating simultaneously and all committee members and the student have agreed to this in advance.

**Time Limit**

There is a ten-year time limit for completion of the master’s or doctoral degrees.

Courses to be applied toward fulfilling the requirements for the master’s and doctoral degrees, including any which may have been transferred from another institution, must have been registered for and completed within the ten years immediately preceding the date of completion of the requirements for the degrees.

**Continuous Registration**

All students admitted to a graduate program at CSU are required to be continuously registered in the fall and spring semester throughout their degree programs. This policy applies from the time of first enrollment through the graduation term. Students may fulfill this requirement by registering for any graduate credit-bearing course (regular or non-regular). As an alternative, students may opt for a Continuous Registration (CR) status. Registration for CR status is accomplished in the same way as registration for courses. Section ID numbers appear in the class schedule under the CR prefix. Students registering for CR will be assessed a fee for each semester of CR registration. Students graduating in summer term are required to be registered for at least one credit or CR. See the Graduate Enrollment Requirement.

Subject to the established time limits for the earning of graduate degrees and the various academic requirements, CR registrants need not apply for readmission should they wish to take additional graduate courses. Such students are ensured a place in their graduate programs as long as they remain in good academic standing. However, students who do not register will need to apply for readmission for their next semester of enrollment.

The availability of the CR option shall not supersede any other registration requirements to which students may be subject. For example, a student’s advisory committee may require additional course work. Similarly, some departments may require credit-bearing registration until the degree is completed. The credit registration requirement for graduate assistantships applies to all students appointed to these positions.

**Graduate Enrollment Requirement**

Graduate degree candidates must be either enrolled for at least one credit or must register for CR during the term (fall, spring, or summer) they will complete their degree requirements.

**Posthumous Degree**

In exceptional circumstances, the Board of Governors of Colorado State University may award degrees posthumously. Recommendations for such an award will only be considered when the student had completed nearly all of the requirements for his or her degree before dying, and when the student’s academic record clearly indicates that the degree would have been successfully completed had the death not intervened. Nominations for posthumous awards of degree will be initiated by the student’s department and approved internally by the relevant college dean and the Provost/Executive Vice President. The posthumous nature of the recommended degree award shall be made explicit when the recommendation is forwarded to the Board of Governors. The Provost/Executive Vice President’s Office shall be responsible for presenting the degree to appropriate survivors.
Evaluation of Graduate Students and Graduate School Appeals Procedure

- Evaluation of Graduate Students
- Graduate School Appeals Procedure

Evaluation of Graduate Students

Graduate students are students, apprentices to the professions, and, when they hold an assistantship or other paid position, employees. Each of these roles has its own rights and responsibilities. Graduate students are responsible for knowing any special expectations and requirements of their department and program. They are expected to remain in good academic standing by making satisfactory progress toward the degree (see Scholastic Standards) and must at all times have an advisor. In the event that an advisor resigns from that position, it is the student’s responsibility to obtain a replacement.

Department codes shall designate a system for periodic evaluation of progress toward completion of the degree. The student and the advisor share responsibility for scheduling evaluations. Results of such evaluations will be sent to the department head and to the graduate student being evaluated.

Students judged to be making unsatisfactory progress toward a degree or whose work is not of the quality expected by the student’s advisor and/or graduate committee may be recommended for academic probation or immediate dismissal from the graduate program (see Scholastic Standards) and/or termination of assistantship. The Dean of the Graduate School will be informed in writing of all students who are making unsatisfactory progress. Copies of the letter shall be sent to the graduate student and also shall be maintained in a departmental file.

Prior to taking actions on academic probation for reasons of unsatisfactory progress toward a degree other than insufficient grade point average, termination of an assistantship for reasons of unsatisfactory performance, or dismissal from the graduate program, an informal conference shall be held among the student, the advisor, and the department head for the purpose of discussing the student’s performance and giving the student an opportunity to respond. The student will be provided reasonable notice of the issues to be covered in advance of the conference. In cases where grounds may exist for termination of an assistantship prior to the end of the stated employment period and for reasons of unsatisfactory performance, the supervisor(s) shall participate in the informal conference.

Graduate students have the right to appeal certain academic decisions, before any action is taken, as described under Graduate School Appeals Procedure. Appeals of grades and academic integrity decisions must utilize appropriate procedures described in the General Catalog. Students alleging termination of assistantships or dismissal from the graduate program on grounds of unlawful discrimination are advised to consult with the Office of Equal Opportunity. (For information on the “at will” employment status of graduate assistants, see Assistantships.)

Graduate School Appeals Procedure

Graduate students may appeal decisions concerning unsatisfactory performance on graduate preliminary or final examinations (see this section), academic probation for reasons of unsatisfactory progress toward the degree other than insufficient grade point average, termination of or election to void an assistantship for reasons set forth in the terms and conditions applicable to graduate assistant appointments, or dismissal from the graduate program for academic reasons to the Dean of the Graduate School. Grading decisions in courses are subject to appeal according to the University’s policy on Appeals of Grading Decisions, as set forth in the Academic Faculty and Administrative Professional Staff Manual (http://facultycouncil.colostate.edu/faculty-manual).

A student has a total of 35 working days to make a formal appeal to the Dean of the Graduate School from the date when an appealable decision has been made that is of concern to the student. Prior to submitting an appeal to the Dean of the Graduate School, the student should discuss the decision with the academic officer(s) whose actions are challenged in an informal attempt to resolve concerns. (Academic officers may include the student’s advisor, graduate committee, department head, supervisor, etc.) If the matter is not resolved to the student’s satisfaction, the student may initiate a formal appeal by submitting the matter in writing to the Dean of the Graduate School. In the written appeal:

1. the student must clearly identify the actions being challenged,
2. the rationale for the challenge
3. the person(s) against whom the complaint is made, and
4. the redress sought.

If an appeal is not filed within 35 working days following the adverse recommendation or decision, then this recommendation or decision will become final. If an appeal is filed within 35 working days, then the decision regarding the appeal is final. The original adverse recommendation or decision being appealed by the student remains in effect until the appeal is final.

The Dean of the Graduate School shall implement the appeal procedures below, keeping records of the case. A review panel, composed of two faculty members with degrees at the level being pursued by the student appellant or higher and one graduate student pursuing a degree at that level or above, will be appointed. One faculty member will be appointed by the Dean of the Graduate School and another faculty member will be appointed by the dean of the college in which the student appellant’s program is located. These appointees will be from departments other than that of the student appellant, but they should be from related disciplines so they are reasonably familiar with the standard procedures in that department. In the event that either the Dean of the Graduate School or the dean is a principal in the case, the Provost will appoint appropriate faculty members. The Graduate Student Council will provide a list of graduate students pursuing graduate degrees who are willing to serve on review panels from which the Dean of the Graduate School will appoint a student who is from a different department than the student appellant, but who should be from a related discipline. In the event that the Dean of the Graduate School is a principal in the case, the Provost will appoint the student member.

The Review Panel will consider the case in detail. It must review any written record of the case. It must afford the student appellant an opportunity to appear in person before it and consider any relevant written materials the student may wish to bring to its attention. The panel will hear from the academic officer(s) whose action is being appealed and may confer with other involved parties. It shall evaluate any other information it deems important to its deliberations. Written summaries of the deliberations will be kept. To overcome the presumption of good faith in the performance judgment by the advisor, supervisor, and/or graduate committee, an appeal must demonstrate that the evaluation was based upon matters that are inappropriate or irrelevant to academic performance and applicable professional standards and that consideration of those matters was the deciding factor in the evaluation.
If the panel finds in favor of the student by a majority vote, it will make appropriate recommendations to the Dean of the Graduate School, such as reassignment to another advisor and/or graduate committee, administration of another examination, or alternative assistantship assignment. The Dean of the Graduate School and the dean of the college involved shall jointly review the case, giving due consideration to the panel’s report and recommendations. Following consultation with the Provost, as appropriate, the Dean of the Graduate School shall make the final decision of CSU. In the event where the Dean of the Graduate School is a principal in the case, the duties of the Dean of the Graduate School, with respect to this case, shall be transferred to the Provost. In the event that the decision recommends termination of an assistantship due to unavailability of funds or other conditions beyond CSU’s control or due to a lack of performance of assigned duties and functions as set forth in the terms and conditions applicable to graduate assistant appointments, the termination must be approved by the Board of Governors, or the President, as its delegated representative.

Other appeal or reporting processes available to students are included below.

1. Students may appeal disciplinary issues, subject to the University Discipline Process, through the Student Resolution Center. (http://www.conflictresolution.colostate.edu/appeals)

2. Students may file a complaint regarding what a person may believe to be an act of discrimination or harassment, based on race/ethnicity, eg. color, religion, national origin, or ancestry, sex gender, disability, veteran status, genetic information, sexual orientation, or gender identity or expression to the Office of Equal Opportunity (http://oeo.colostate.edu/how-to-file-a-complaint).

3. Procedures to report observed, suspected, or apparent Research Misconduct can be accessed through Research Integrity and Compliance Review Office (http://ricro.colostate.edu/research_mis.htm).

### Master's Degrees

- Master's Degrees
- Master of Fine Arts Degree

CSU offers a variety of master's degrees. The features and requirements of these degrees are summarized in the table below.

### Summary of Requirements for the Master's Degrees

<table>
<thead>
<tr>
<th>Degree</th>
<th>Plan</th>
<th>Minimum Number of Credits</th>
<th>Thesis</th>
<th>Foreign Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Accountancy (M.Acc.)</td>
<td>C</td>
<td>30</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master of Agricultural Extension Education (M.A.E.E.)</td>
<td>C</td>
<td>36</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master of Agriculture (M.Agr.)</td>
<td>A,B</td>
<td>30</td>
<td>When req. by dept.</td>
<td>No</td>
</tr>
<tr>
<td>Master of Business Administration (M.B.A.)</td>
<td>C</td>
<td>40-52</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master of Computer Information Systems (M.C.I.S.)</td>
<td>C</td>
<td>35</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master of Computer Science (M.C.S.)</td>
<td>C</td>
<td>35</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master of Education (M.Ed.)</td>
<td>A</td>
<td>30</td>
<td>Yes</td>
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</tr>
<tr>
<td>Master of Education (M.Ed.)</td>
<td>B</td>
<td>30</td>
<td>No</td>
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</tr>
<tr>
<td>Master of Engineering (M.E.)</td>
<td>C</td>
<td>30</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master of Fine Arts (M.F.A.)</td>
<td>A</td>
<td>48-60</td>
<td>Yes</td>
<td>When req. by dept.</td>
</tr>
<tr>
<td>Master of Fish, Wildlife &amp; Conservation Biology (M.F.W.C.B.)</td>
<td>C</td>
<td>36</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Master of Greenhouse Gas Management and Accounting (M.G.M.A.)</td>
<td>C</td>
<td>37</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Master’s Degrees

An important distinction is made between Plan A and Plan B, Plan C, and the Professional Science Master’s. The former, Plan A option, requires the preparation of a thesis. The thesis is typically a written formal document which addresses, in an original fashion, some important concern of the discipline. A thesis involves significant independent work. A certain number of credits are allowed for the preparation of the thesis. The Plan B degree does not require a thesis; instead, more credits are earned in other types of courses and/or a scholarly paper is required.

Plan C master’s degree options are distinguished in two ways. First generally, only course work is required. No thesis, project, or final examination is required; however, some specific programs may require an internship, practicum, or other experience consistent with expressed goals of the program, as approved by the University Curriculum Committee. Second, Plan C options are designed for professional degrees; thus, this option is not available in the M.A. or M.S. Further, within any given department, Plan C degrees may not bear the same title as those with Plan A or Plan B options. Please note, however, that not every professional degree need offer the Plan C option.

The Professional Science Master’s (PSM) degree option (30 credit minimum) is designed to meet the following curriculum requirements: 1) a majority of credits must be earned in advanced science, technology, engineering, math and/or computational sciences courses over the two year program; 2) there must be a professional skills component: and 3) a capstone project based on an experiential component, that includes a field placement course (e.g. internship, practicum, affiliation, field work) must be a part of the curriculum. The PSM is to provide managers for organizations that provide technology-based outcomes in public, private, government, or non-profit sectors. PSMs must conform to the nationally accepted academic criteria for the PSM curriculum as determined by the PSM National Office (psmoffice@sciencemasters.com).

An active advisory board composed of individuals from industry, business, government, non-profit organizations, and CSU faculty is required; advisory board members serve to provide advice on the program curriculum, assist with student projects and placement, and interact individually with students. To be recognized as a PSM degree, programs must first be approved by the PSM National Office, and subsequently approved and routed through the paths required by the CSU Faculty Council, Curricular Policies and Procedures Handbook. PSM specializations are listed in the Graduate and Professional Bulletin.

Credit Requirements

Credit requirements vary greatly; for certain terminal professional degrees, the minimum number of credits may exceed 60; other master’s degrees vary from 30 to 36 (Table 1). Further, individual departments may have credit requirements in excess of these minimum university requirements. However, the number of 500 level or above credits earned for the degree must be 16 or 50% for a Plan A or B, whichever is most and 21 or 50% for a Plan C, whichever is most.

1 Final examinations are required for all degrees except Plan C master degree.
2 At least 16 credits must be earned at the 500-level or above and at least 12 of these must be in regular courses, except Plan C. However, the number of 500 level or above credits earned for the degree must be 16 or 50% for a plan A or B, whichever is most and 21 or 50% for a plan C, whichever is most.
3 If a report is written, a minimum of 30 credits is required. If only course work is taken, a minimum of 32 credits is required.
4 Demonstrated equivalency may reduce the total required to less than 58 but not less than 40.
by the University Curriculum Committee. Additionally, Plan C master’s
may not include internship or practicum credits toward the degree unless
one or both are required by the program, as approved by the University
Curriculum Committee. Credits earned in pursuit of one master’s degree
may not be used for a second except in those cases where an M.A.
degree is applied to the M.F.A. (see section on Master of Fine Arts
Degree).

Final Examination
At the discretion of the committee, the final examination may be oral
written, or both. At least one week before the final examination the
advisor must inform the student and the committee member of the
nature and scope of the examination.

Master of Fine Arts Degree
This is a terminal degree for practicing professionals in the visual or
literary arts. In general, it requires at least three years of full time study
beyond the baccalaureate or at least one year of full time study beyond
the Master of Arts degree.

This degree requires the preparation of a major artistic work. This work,
whether in the form of a product of the visual arts, a performance, or a
written manuscript, must

1. demonstrate a level of creativity sufficient to establish the student as
a member of the appropriate artistic community, and
2. stand in its own right as a significant aesthetic or literary
contribution. This work is presented as an M.F.A. thesis.

Credit Requirements
Total credit requirements vary from 48 to 60 according to the department
in which the degree is earned. Further, individual departments may have
requirements in excess of CSU minimums laid out in this section.

In general, a minimum of 32 credits must be earned at CSU, 21 of which
must be earned after formal admission to the Graduate School.

However, if a previously completed Master of Arts degree is submitted in
partial fulfillment of the requirements, up to 30 credits may be accepted
toward the program. If this option is used, no additional transfer credits
may be accepted. In this case, a minimum of 18 credits must be earned
after formal admission to the M.F.A. program.

At least 16 of the credits earned at CSU must be in 500 or higher level
courses. Of the 16, 12 must be in regular courses. Other courses may
be at the 300 or 400 level or may be in courses not defined as regular.
However, the number of 500 level or above credits earned for the degree
must be 16 or 50% for a Plan A or B, whichever is most and 21 or 50% for
a Plan C, whichever is most.

Final Examination
The final examination may be oral or written or both. At least one week
before the final examination, the adviser must inform the student and the
committee members of the nature and scope of the examination.

Ph.D. Degree
The Ph.D. is the highest academic degree offered by CSU. Those who
earn it must demonstrate significant intellectual achievement, high
scholarly ability, and great breadth of knowledge. The nature of the
degree program will vary greatly depending on the discipline involved.

In addition, doctoral work requires heavy participation in research or
other kinds of creative activity. Particular projects may assume any of an
almost infinite number of forms.

Ph.D. Candidacy
Doctoral students at CSU are considered to achieve “candidacy” for the
degree upon passage of preliminary examinations. Candidates generally
retain that status through the completion of the degree. However,
candidacy is lost if

1. the student is placed on probation due to insufficient grade point
average;
2. the student’s graduate advisory committee finds that insufficient
progress is being made toward the degree; or
3. the student is dismissed for academic or disciplinary reasons.

The students who lose candidacy may regain it, when appropriate,
through the established procedures for improving grade point average,
demonstrating satisfactory progress, or achieving readmission.

The preparation of a dissertation is required. The dissertation is a formal
written document which presents the results of sustained research or
investigation on an important intellectual problem. The dissertation
must represent independent intellectual achievement and must make
a meaningful contribution to the knowledge, accumulated wisdom,
culture of the field in which it is written. Students typically earn a
number of research credits while completing the work which underlies
the dissertation.

Credit Requirements
A minimum of 72 semester credits beyond the baccalaureate is required.

For students who submit a master’s degree in partial fulfillment of these
requirements: A master’s degree from an accredited college or university
may be accepted for a maximum of 30 credits. In addition, up to ten
credits in courses earned after the date on which the master’s degree
was awarded may be accepted in transfer if approved by the student’s
advisory committee, the department, and the Graduate School (http://
www.graduateschool.colostate.edu). A minimum of 32 credits must be
earned at CSU after admission to a doctoral program. At least 21 credits
beyond the master’s degree must be earned in courses numbered 500 or
above.

For students enrolled in a continuous master’s/Ph.D. program at CSU:
All courses taken during the master’s program may be applied to the
doctoral degree, even if the total master’s degree credits exceed 30.
These courses must be specified on the Ph.D. program of study and
approved by the student’s advisory committee, the doctoral department,
and the Graduate School. Continuous programs are those in which the
student is admitted to the Ph.D. program and formally registers the
Fall or Spring semester immediately following receipt of the master’s
degree. All other prescribed credit requirements of the master’s and Ph.D.
degrees remain in effect in such cases.

For students who do not submit a master’s degree in partial fulfillment of
these requirements: Up to ten credits earned at an accredited college
or university may be accepted for transfer if approved by the student’s
advisory committee, the department, and the Graduate School. A
minimum of 62 credits must be earned at CSU after admission to a
doctoral program. At least 37 credits beyond the bachelor’s degree must
be earned in courses numbered 500 or above.
A professional post baccalaureate degree in Medicine, Veterinary Medicine, Dentistry, Pharmacy, Law, or Divinity may be accepted for a maximum of 30 credits. The institution granting such a degree must be certified by one of the major regional accrediting agencies. Students contemplating this option may be required to pass an equivalency examination to assure that they possess levels of knowledge and skill generally expected of master's degree holders.

Residency Requirement
There is no CSU residency requirement for Ph.D. degree programs; however, such requirements may exist at the department level. Students should check with their departments about such policies. Whether or not a residency requirement exists, registration policies as outlined above must be followed.

Preliminary Examination
A preliminary examination shall be administered at least two terms before the final examination to determine whether the student is qualified to continue toward the doctorate. The usual procedure is to have written examinations in the field of specialization and supporting areas followed by an oral examination. In order to assure full information to all concerned (student, major professor, all committee members, department head, Graduate School), the intention to hold a Ph.D. Preliminary Examination is to be publicized two weeks in advance by the advisor. The student is responsible for obtaining the Report of Preliminary Examination (GS Form 16 (http://graduateschool.colostate.edu/current-students/forms/#GS16)) from the Graduate School and returning it, appropriately completed, after the conclusion of the examination.

Providing the committee approves, a candidate who fails the preliminary examination may be reexamined once and, for the reexamination, may be required to complete further work. The reexamination must be held not later than 12 months after the first examination. The examination must not be held earlier than two months after the first examination unless the student agrees to a shorter time period. Failure to pass the second examination results in dismissal from the Graduate School.

Participation in oral examinations by the student and/or one or more members of the examining committee may be via electronic link so long as all are participating simultaneously and all committee members and the student have agreed to this in advance.

Final Examination
At least one month before the final examination, the advisor will inform the student and the committee members of the nature and scope of the examination. Normally, the final examination will cover primarily the dissertation, but additional subject matter, specified by the committee at the time of the preliminary examination, may also be covered. Dissertation defenses are open to all members of the CSU community and the public at large. In order to assure timely notification across the entire campus, advisors should announce this information to CSU community and public at large at least two weeks in advance. Advisors may publicize the defense through CSU's electronic announcement and message delivery system. The chairperson of the committee shall have the prerogative to decide whether those in attendance (outside of the committee) should be allowed to ask questions of the candidate during an oral examination.

Graduate Certificates
Graduate Certificate Program
Graduate Certificates are optional and are offered by certain departments, Special Academic Units (SAUs), or colleges. A Graduate Certificate consists of a minimum of 9 specified credits, and not more than 15 credits. All of the credits must be coursework at the graduate level (500- to 700-level). A student must earn a cumulative GPA of 3.000 or better and a minimum of a “C” in the courses required in the Graduate Certificate. All coursework must be traditionally graded.

A Graduate Certificate may include courses from one or more academic units or special academic units. For certificates involving courses from two or more units, the coordinating department is indicated in the List of Graduate Certificates.

Guest and degree-seeking students with bachelor's degrees are eligible to apply to participate in the Graduate Certificate Program. Students must apply for admission into the program and for the conferment of the certificate. Students must be enrolled at CSU in order to receive and complete the certificate requirements. Graduate certificates by title are noted on the student's academic record (transcript) at the time of degree conferral. The certificate title is not on the diploma. See the Graduate School website (http://www.graduateschool.colostate.edu/prospective-students/degrees.aspx) for details.

Graduate Thesis and Dissertation
Although a thesis or dissertation is planned and executed with the advice and supervision of the advisor and committee, the student must assume primary responsibility both in terms of the content of the document and in terms of its format and presentation.

Graduate students may be responsible for all or part of the expense of their thesis/dissertation research. This expense is highly variable depending on the discipline, the research topic, and the availability of support from funded projects, sponsored programs, or academic departments.

Theses and dissertations submitted for graduate degrees must be completed in the English language. In circumstances in which scholarship would be enhanced if these documents are completed in a foreign language, this must be approved by the student's committee and the Chair/Head of the program. In such cases, an English translation of the title and abstract must be included in the document.

The candidate must submit to the Graduate School the Thesis/ Dissertation Submission Form and submit his or her thesis/dissertation electronically by the published deadline date listed on the Graduate School website. Students should consult these deadlines whenever they approach important steps in their careers. Suggestions for preparation of the manuscript may be found in the Thesis and Dissertation Formatting Guide (http://graduateschool.colostate.edu/documents/eTD-Formatting-Guide.pdf).

Students have the right to disseminate the findings of their theses and dissertations more broadly than is accomplished by archiving and microfilming. Prompt publication of important results is clearly in the best interests of the academic community and society as a whole. Students are therefore encouraged to bring such results to the manuscript submission stage within one year of the award of the degree.
Master’s theses and doctoral dissertations are electronically archived by the Libraries and ProQuest/UMI. General information on copyrights, publication, and embargos may be found in the Thesis and Dissertation Formatting Guide (http://graduateschool.colostate.edu/documents/eTD-Formatting-Guide.pdf). As a public institution, CSU exposes bibliographic information about theses and dissertations on the Internet for purposes of discovery and retrieval. One of the functions of CSU is the generation and dissemination of contributions of knowledge and culture. The fundamental purpose of theses and dissertations is to make such contributions openly available for public benefit.

Graduation Procedures
Application for Graduation
A graduate student must apply for graduation by submitting to the Graduate School Office an Application for Graduation (GS Form 25). (Deadlines are available on the Graduate School website (http://graduateschool.colostate.edu/).) For students in combined bachelor’s/master’s degree programs (Integrated Degree Program (IDP) Admissions), an application for graduation from the Graduate School must be either contemporaneous or subsequent to filing an application for receiving the bachelor’s degree. Students must be registered during the semester they complete their degree requirements as specified under Graduate Enrollment Requirement above.

Clearance for Graduation
Departmental requirements (i.e., language requirement, preparation of required papers for publication, return of keys and equipment, cleaning up office and laboratory areas) and discrepancies in grades for graduation term must be completed by the end of the term.

Failure to meet all requirements during the term requested on GS Form 25 will necessitate reapplication for graduation (online). Diplomas will be mailed approximately six to eight weeks after the end of the graduation term to the mailing address on file with CSU.

Inter-University Graduate Programs
- Colorado Exchange Program
- Collaborative Degree Program

Colorado Exchange Program
Colorado State University, in cooperation with the Colorado School of Mines, the University of Northern Colorado, and the University of Colorado, provides tuition-free instruction for graduate students through a reciprocal agreement. The following conditions must be met to qualify for the program:

1. The graduate student is registered and paying full tuition and fees at the home institution.
2. The course requested is part of a regular load – not an overload.
3. The student is pursuing a program leading to an advanced degree.
   All courses requested must be required for the degree program or a prerequisite for one of the required courses.
4. The course is not offered on the student’s own campus when that student can take advantage of it.
5. The request is presented prior to the registration for the semester the term course is to be taken.
6. The request is presented any term except graduation semester.
7. A separate request form is completed for each course taken.
8. Space is available.

Tuition and fees for such registrations will be assessed as though the courses were taken on the CSU campus. Credits so earned may count toward fulfillment of degree requirements within the limits set by the student’s department, graduate committee, and the Graduate School.

Credits earned at Colorado institutions in cooperative programs approved by the Graduate School at CSU may not exceed 49 percent of the total credits presented for an advanced degree. Credits used to fulfill degree requirements at one of the other institutions may not be used to fulfill requirements at CSU.

Additional information and registration forms are available in the Registrar’s Office (http://registrar.colostate.edu).

Collaborative Degree Program
A collaborative degree is one that partners a CSU graduate program with a similar graduate program at an international university in order to allow students to transfer credits between the two programs and earn a degree at CSU. Both CSU and international students must earn a minimum of 60% of the degree credits at CSU and the remaining credits at the international university in either a master’s or PhD degree.

The coursework for the degree program offered at the collaborating university must meet CSU standards. The courses accepted for transfer from the collaborating university to the CSU program must be equivalent in credit and content. These courses must be listed, evaluated and approved by the CSU department offering the degree; these courses must provide similar content and student learning outcomes and be reflected in the course syllabi as such. The coursework/syllabi that will be transferred from the collaborating university must be translated into English by the collaborating university for evaluation purposes.

International universities, colleges, or degree granting institutions must be invited to participate in a Collaborative Degree Program by a CSU program department. Such institutions must be accredited by a major regional accrediting agency in order to be eligible to participate in a Collaborative Degree Program. An agreement must be signed between CSU and the collaborating university that specifies the conditions of the agreement such as admission and pathway requirements, number of students eligible to participate, insurance, travel, enrollment, and other administrative issues. Collaborative degree students must meet all Graduate School admission and degree requirements. (See the Graduate School website (http://www.graduateschool.colostate.edu) for more details.) The agreement must be reviewed and approved by the following individuals from CSU: Dean, Department Head, and Program Director of the program wishing to create a Collaborative Degree Program; Legal Counsel; International Programs; Provost; Graduate School; individuals from the international university that have the authority to sign in support of the Collaborative Degree Program on behalf of the collaborating university. When a student is completing a master’s thesis or doctoral dissertation an additional agreement/Cotutelle must also be completed and signed by the relevant parties that specifies the co-direction of the work and other pedagogical and publication-related issues. When students meet the requirements for the Collaborative Degree Program, CSU independently confers the degree. The collaborating university may also independently confer a degree. A review process to monitor the quality and outcomes of the Collaborative Degree Program will be...
established by the department. Data will be reported to the College Dean and Graduate School or as stipulated in the review process.

Financial Support

- Merit or Competency-Based Financial Support
- Application for Financial Support
- Financial Aid
- Types and Amounts of Aid
- Credit Requirements
- Satisfactory Academic Progress Standards
- Fellowships and Traineeships
- Income Taxes
- Veteran's Benefits
- Sponsored Students
- Student Employment
- Awards from Outside Agencies

There are two broad categories of financial support available to graduate students. The first is awarded on the basis of academic merit or the possession of competencies that permit the performance of specific services. The second is based on demonstrated student financial need.

Merit or Competency-Based Financial Support

Awards are generally arranged or initiated at the level of the academic department. Students should contact the department head on all matters relating to them.

Application for Financial Support

Deadlines

Most merit- or competency-based financial support is awarded on an academic year basis beginning in the Fall Semester. The primary deadline for receipt of complete applications for such support is February 15. Persons who wish to be considered should submit an application for admission. This will ensure consideration for all types of support that might be available. The first review and award cycle will begin immediately after February 15.

However, applications completed later than this date will be considered as availability of funds permits. Some departmentally-based awards, particularly in the form of research assistantships and teaching assistantships, may be awarded on a later schedule. Also, ad hoc funding opportunities may become available at various times throughout the year.

Applicants who intend to begin their studies in the Spring Semester or Summer term should submit application for admission (http://www.graduateschool.colostate.edu/prospective-students/apply) and application for financial support by the appropriate primary deadline date, July 15 or November 15 respectively. Again, this will ensure consideration for all types of support that might be available. Applications completed later than these dates may be considered for any appropriate departmentally-based or ad hoc awards.

Some forms of financial support applications may require other specification as indicated below.

Financial Aid

Application Requirements

1. Be admitted to the graduate school in a regular program of study.
2. Complete a Free Application for Federal Student Aid (https://fafsa.ed.gov) (FAFSA). This will require your Federal Student Aid (FSA) ID Username and Password. If you have not created an FSA ID, you will be prompted to do so on the FAFSA website.
   a. Applicants should prepare their most recent federal income tax return before completing the FAFSA. For priority consideration the FAFSA should be submitted to the federal processor by March 1.

Address/Phone/Fax

The Office of Financial Aid (http://sfs.colostate.edu)
Division of Enrollment and Access
Centennial Hall Colorado State University
Fort Collins, CO 80523-1065
Email: financialaid@colostate.edu
Phone: (970) 491-6321
Fax: (970) 491-5010
http://sfs.colostate.edu

Types and Amounts of Aid

<table>
<thead>
<tr>
<th>Title</th>
<th>Amounts per year</th>
<th>Availability of funds</th>
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</thead>
<tbody>
<tr>
<td>Federal Direct Stafford Loan</td>
<td></td>
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</tr>
<tr>
<td>Subsidized Loan</td>
<td>Not available for Graduate Students</td>
<td>N/A</td>
</tr>
<tr>
<td>Unsubsidized Loan</td>
<td>Not to exceed $20,500 per school year</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Supplemental Loan</td>
<td>Up to $20,000 per school year</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Unsubsidized Loan (Veterinary medical students only)</td>
<td>Up to $10,000</td>
<td>Limited</td>
</tr>
<tr>
<td>Health Professions Loan (Veterinary medical students only)</td>
<td>Up to $3,000</td>
<td>Limited</td>
</tr>
<tr>
<td>Federal Work-Study</td>
<td>Up to $3,000</td>
<td>Limited</td>
</tr>
<tr>
<td>Colorado Graduate Grant</td>
<td>$3000</td>
<td>Limited</td>
</tr>
</tbody>
</table>

Graduate fellowships and graduate teaching and research assistantships are offered through the departments.

Funding

All financial aid, other than Federal Direct Loans, is awarded to the neediest students until funds have been exhausted. Federal Direct Loans are awarded on an ongoing basis.

Website

Please visit the Office of Financial Aid (http://sfs.colostate.edu) website for information on applying for financial aid, types of financial aid, costs, paying your bill, residency requirements, scholarship searches, how to contact us, etc.
Credit Requirements

Graduate students must be enrolled in at least five (5) credits to receive Federal Direct Loans. A financial aid award is based on full-time enrollment (9 credit hours); if a student is enrolled part-time, financial aid may be reduced and/or delayed. A student registered for Continuous Registration is not eligible to receive financial aid and is also not eligible for a loan deferment.

Satisfactory Academic Progress Standards

Students applying for and/or receiving financial aid are expected to maintain satisfactory academic progress. Failure to perform at established levels may result in students becoming ineligible for financial aid. Students’ total number of credits are also evaluated, and students may not exceed established credit limits. Additionally, if a student receives all “F”, “U”, and/or “W” grades, they will be required to verify the last date of attendance and may be required to return up to 50% of the financial aid received. Copies of the complete policy (http://sfs.colostate.edu) are available online and in the Financial Aid Guide.

Fellowships and Traineeships

All fellowship awards are based on merit and are highly competitive.

These forms of support involve outright awards to cover educational expenses and may in some cases cover tuition, fees, and other direct expenses. They do not require any service on the part of the student. Several programs funded by a variety of public and private sources may be available at any given time. Graduate fellowship awards are available. These awards are designed to be part of a full support package and hence are usually supplementary to an assistantship appointment. Departments nominate promising candidates for these awards in response to a call in the fall of each year. Fellowships are given in recognition of academic excellence, student contribution to any of the goals of the CSU strategic plan (e.g., undergraduate instruction, diversity), and departmental quality.

The Martin Luther King, Jr. Graduate Scholarship provides support each year for a graduate student at CSU. It is awarded on the basis of academic excellence and contributions to the enhancement of individuals from ethnically diverse populations.

Income taxes

Assistantship stipends are considered payment for services rendered and are thus subject to regular income taxation. Appropriate amounts are withheld from stipend checks as per Internal Revenue Service Requirements.

Tuition payments made on behalf of graduate assistants may be considered “qualified tuition reductions,” not subject to income taxation. However, this is explicitly dependent upon the proper execution of the formal contract described above.

Fellowship awards are considered taxable income. However, tuition and certain other direct educational expenditures may be excluded. Most fellowship holders will incur some tax liability. CSU will not deduct from fellowship checks to cover this liability; paying the taxes is a matter of individual responsibility. Fellowship holders should be aware of this additional liability in planning their financial affairs.

Veteran’s Education Benefits

The Registrar’s Office assists the Department of Veterans’ Affairs (VA) in providing certification for the following education benefits:

Under Title 38, U.S. Code
- Chapter 30 (Montgomery G.I. Bill)
- Chapter 31 (Vocational Rehabilitation)
- Chapter 32 (Post-Viet Nam Era)
- Chapter 33 (Post-9/11 G.I. Bill)
- Chapter 35 (Dependent Educational Assistance)

Under Title 10, U.S. Code
- Chapter 1606 (Selected Reserve/National Guard Members)
- Chapter 1607 REAP (Reserve Education Assistance Program)

In addition, the Office of Military & Veteran Benefits will advise and assist students in:
- Meeting residency requirements under the Veterans Choice Act of 2014, Colorado’s GI Promise or the Yellow Ribbon Program
- Requesting and obtaining Joint Service Transcripts
- Obtaining additional campus services

Students eligible for any of these benefits must contact the Office of Military and Veteran Benefits (http://registrar.colostate.edu/military-veterans-benefits/benefits-contact-information) in the Registrar’s Office prior to the expected date of enrollment. Applicants should apply to CSU in a degree-seeking major or for teacher licensure before applying for veterans’ education benefits.

A description of the services (http://veteransresources.colostate.edu) CSU provides may be found online. Regulations governing receipt of veteran’s education benefits, Standards of Progress, and other policies (http://registrar.colostate.edu/military-veterans-benefits) are also available online.

Sponsored Students

Sponsored students are those whose tuition, fees, or expenses are paid by an employer government agency or other sponsoring agency. Many international students, as well as some from the U.S. fall under this category. In those cases where sponsors provide direct support for students’ research activities, special custodial accounts must be established. Additional fees are associated with this service. Specific information on these accounts is provided to each student at the time of admission and additional advice may be obtained from the Graduate School, or in the case of international students, from the Office of International Programs, to the attention of the International Sponsored Student Coordinator, International Student and Scholar Services (ISSS).

Student Employment

Office in Centennial Hall
(970) 491-5714

Employment opportunities available include the Work-Study Program, on-campus departmental positions, and community part-time employment. Refer to the Student Employment Services (http://ses.colostate.edu) website for more details.
Awards from Outside Agencies

Many foundations and government agencies offer awards for particular purposes. Often, individual interested students must initiate application procedures. The Graduate School provides information on the use of a computerized process to locate graduate funding. Information on Fulbright and Rotary Scholarships is available from the Office of International Programs. Information for Marshall or Rhodes grants can be obtained through the Honors Program.

Tuition, Fees, and Expenses

- Graduate Students (Except Professional Veterinary Medical Students)
- Graduate Charges for Technology/Term
- Veterinary Medical Students Enrolled in Professional Course Registering for 9-24 Credits
- Schedule for Continuing Education (CSU Online)
- Special Fees
- Paying Your Bill
- Conditions that Affect the Assessment of Charges
- Additional Academic Expenditures
- Personal Expenses
- "In-State Residency" for Tuition Classification Purposes

Authority to set tuition rates is vested in the governing boards of Colorado's state institutions of higher education. The tuition rates which apply to any succeeding fiscal year will not be known until June of each year. The Board of Governors of the CSU System, therefore, reserves the right to change tuition and fee schedules and related policies, including the time, date, and method for payment, at any time.

By registering for a course, a student acknowledges legal and financial responsibility for any and all tuition and fees assessed as a result of registration. Students must follow, and are financially responsible for, formal add/drop and withdrawal procedures at CSU. Non-attendance does not relieve a student of financial responsibility. A student whose account becomes delinquent will be held responsible for paying any late payment charges, collection agency fees up to 40% of the debt, and all costs and expenses including reasonable attorney fees that CSU incurs in its collection efforts. CSU will not register a student, release a diploma or proof of degree, nor provide official transcripts to any current or former student who has past due financial obligations to CSU.

Graduate Students (Except Professional Veterinary Medical Students)

Resident and Non Resident fees can be found on the Tuition & Fees (http://registrar.colostate.edu/student-resources/tuition-fees) website.

Approved WICHE Programs

Out-of-state residents enrolled in WICHE’s WRGP Program in Animal Reproduction and Biotechnology (M.S., Ph.D.), Construction Management (M.S.), Education and Human Resource Studies (Ph.D.), Master of Agriculture in Integrated Resource Management, Political Science in Environmental Politics and Policy (Ph.D.), Radiation Protection (M.S., Ph.D.), Social Work, Rural and Changing Communities (M.S.W.), and Technical Communication (M.S.) pay Colorado resident tuition.

Graduate Charges for Technology/Term

Fees can be found on the Tuition & Fees (http://registrar.colostate.edu/student-resources/tuition-fees) website.

Veterinary Medicine Students Enrolled in Professional Course Registering for 9-24 Credits

Senior veterinary students are assessed tuition on a credit basis for each semester since their class schedules vary during the three-semester period. Fees (http://registrar.colostate.edu/student-resources/tuition-fees) for senior veterinary students are assessed over three semesters in equal payments. The University Technology Fee is also assessed to seniors for summer term.

Schedule for Continuing Education (CSU Online)

Tuition rates for graduate level courses and graduate programs vary by program and delivery type. As a self-supporting unit of CSU, the Division (CSU Online (http://www.online.colostate.edu)) sets tuition rates that meet the instructional and administrative costs that are unique to the different programs offered. Information on tuition rates is available by contacting CSU Online at (970) 491-5288 or (877) 491-4336. For Denver-based course and program tuition rates, call the Colorado State Denver Center at (303) 573-6318.

E-mail address: onlineplus_questions@colostate.edu (CSU_Online_Questions@mail.colostate.edu)

Special Fees

In addition to the regular charges which all students are assessed, other fees may be applicable at certain times or for certain groups of students pursuing particular activities.

<table>
<thead>
<tr>
<th>Continuous registration fee</th>
<th>$150.00 per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission application fee</td>
<td>$50.00</td>
</tr>
<tr>
<td>Late registration fee</td>
<td>$50.00</td>
</tr>
<tr>
<td>Transcript fee per copy</td>
<td>Refer to <a href="http://registrar.colostate.edu/transcript-orders">http://registrar.colostate.edu/transcript-orders</a></td>
</tr>
<tr>
<td>Course Fees</td>
<td>Certain courses carry a special fee which is assessed at the time of registration. The costs vary and are determined annually. The current fees for each course can be found at <a href="http://registrar.colostate.edu/tuition-fees">http://registrar.colostate.edu/tuition-fees</a>. The fees are for the use of materials or other specific expenditures necessary for the conduct of instruction.</td>
</tr>
</tbody>
</table>

International and Scholar Services

The International Student and Scholar Services administrative charge is $90 the first semester and $45 for each subsequent semester. Fees are subject to change.

Nonrefundable Fees

<table>
<thead>
<tr>
<th>Admission application fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>New and transfer students</td>
</tr>
<tr>
<td>Guest students</td>
</tr>
</tbody>
</table>
Applicant fee for admission to professional program in 
Veterinary Medicine $60.00
Enrollment Deposit and Admission Confirmation (new and 
transfer students) $300.00
Composition Directed Self-Placement Survey $12.00
Mathematics Placement Examination $15.00
Credit Established by Challenge Examination $65.00
Language Placement Examination (one-time charge; no 
charge for retakes) $10.00
Charge for technology, per term (college-wide) $66.00
Agricultural Sciences $86.15
Business $103.00
Engineering $170.00
Health and Human Sciences $71.00
Intra-University N/A
Liberal Arts $57.30
Natural Resources $94.50
Natural Sciences N/A
Veterinary Medicine & Biomedical Sciences N/A
University Technology Fee $25.00
University Facility Fee (per credit hour) $20.75

1 Fees are subject to change.
2 For full-time resident and nonresident undergraduates and 
   graduates. Student fees in the Colleges of Natural Sciences 
   and Veterinary Medicine and Biomedical Sciences are not assessed a 
   charge. Students enrolled for them or more credits are considered full 
   time and required to pay the full amount according to their college 
   affiliation. Part-time undergraduate and graduate students pay a 
   prorated amount.
3 The College of Health and Human Sciences is the only college that 
   applies their charge during the summer session.

Paying Your Bill
Payment of Student Accounts
Any student who completes registration agrees to pay the University as 
follows:

<table>
<thead>
<tr>
<th>Charges</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition, fees, residence hall charges, health insurance and other institutional charges</td>
<td>September 10</td>
<td>February 10</td>
<td>Due when billed</td>
</tr>
</tbody>
</table>

Charges that are incurred after the bill date for the semester will be billed 
mid-month of the following month and have a due date of the 10th of the 
month after that statement date or the following business day if the 10th 
falls on a weekend or University holiday.

University charges are due by the date specified on your bill. Due dates 
are the 10th of each month unless the 10th falls on a weekend or holiday.
In those cases, the due date is the following work day. Payment of 
all CSU charges is to be received in the University Cashier’s Office or 
cashiering system by the due date to avoid late payment penalties. 
Penalties include a late payment charge and holds on CSU services.

Payments by check are processed when received – postmarks do not 
apply and future dates are not honored.

Students are responsible for all charges on their account and 
arrangement of payments due. Payments should only be made when 
a balance due exists on an account. Credit card overpayments will be 
credited back to the originating card. All other overpayments will be 
refunded via mailed check to the student.

In support of CSU’s Green Initiatives, CSU implemented e-billing effective 
in Fall 2010. Billing notifications are e-mailed to Rams e-mail addresses. 
Students can then log into RAMweb to view their University Billing 
Statement. Additional billing notifications may be sent to alternate e-
mail addresses maintained by the student on RAMweb. Students who are 
sponsored by a third party may request direct billing to the sponsor for 
tuition, fees, and other related educational expenses. Detailed information 
on sponsor billing is available upon request from Student Financial 
Services (http://sfs.colostate.edu/third-party-sponsors). Arrangements 
for sponsor billing must be made prior to the student account due dates 
to prevent late payment penalties.

“Billing Information” in RAMweb (https://ramweb.colostate.edu) provides 
more information on setting up a billing address, billing statement 
information, accepted payment methods, credit balance refunds, and 
education tax credit information.

Late Payment Penalties
Late Payment Charges
Mailed payments must reach the University Cashier’s Office, 6015 
Campus Delivery, by 4:00 p.m. mountain time on the due date (postmarks 
do not apply). Online payments must be made by 2:00 p.m. mountain 
time on the due date for the payment to be considered timely. Penalties 
in the amount of 1.5% of the past due balance will be assessed monthly 
for the purpose of encouraging prompt payment. Failure to pay amounts 
due may also result in referral of outstanding balances to a collection 
agency. These agencies may take legal action to collect past due 
balances. Further, CSU reserves the right to impose a penalty fee and 
financial hold for returned checks.

Registration, Transcript, and Diploma Holds
Unpaid past due balances may cause a hold on registration, transcripts, 
and diplomas. CSU will not register a student, release a diploma or proof 
of degree, nor provide an official transcript or diploma to any student or 
former student who has past due financial obligations to CSU until the 
hold is removed. The release of the hold may be expedited by paying the 
past due balance in full.

Returned Checks
Any person who presents a check to CSU, either paper or electronic, 
that is not accepted for payment by the bank (due to insufficient funds, 
stopped payment, non-existent account, or other reason for which the 
person is responsible) is charged a penalty as provided by state law. 
Contact the Treasury Services Office, 555 S. Howes Street First Floor, for 
the current returned check penalty fee.

CSU sends a notice to the person who presents a check that is not 
accepted for payment by the bank. In the case of students, the notice 
is mailed to the student’s billing address on file with CSU. Within the 
time specified in the notice, the person is expected to make payment 
by guaranteed funds including cash, cashier’s check, money order, wire 
transfer, or accepted credit cards. The payment must be equal to the 
total of the invalid check plus penalty fee if applicable. Failure to do so 
will result in action deemed appropriate under the circumstances. If the
original presentation of the returned check allowed a student to register for an academic term and full payment of the check plus penalty fee is not made within the time specified in the notice, the student’s class schedule may be cancelled.

Conditions that Affect the Assessment of Charges

Tuition and fees for a student registering for a combination of regular on-campus courses, or Continuing Education (CSU Online) courses will be assessed individually according to the schedule established for each. Students who are off campus for full-time internships, practica, or professional affiliations, and who are not concurrently enrolled in other on-campus experiences or courses, may be assessed a reduced student fee. CSU usually pays the tuition on behalf of teaching assistants (full-time registrants who receive a stipend of at least $1,370.00 per month). Research assistantship stipends are typically paid from research grants received by faculty members. Tuition charges may also be paid from these grant funds on behalf of the students, but practice is highly variable. Information should be requested from the department head or the faculty member serving as principal investigator on a particular grant. All students are directly responsible for the payment of fees.

Integrated Degree Program (IDP) Admission students enrolled in combined bachelor’s/master’s degree programs will be assessed tuition at the undergraduate rate until they have accumulated 120 credits towards their baccalaureate degree after which they will be assessed tuition at the graduate rate. Such students likewise become eligible to hold Graduate Assistantships at the same transitional time.

Additional Academic Expenditures

Graduate students may be responsible for all or part of the costs involved in the preparation of theses, dissertations, or other pieces of scholarly work required in the academic program. The expenses of an appropriate research or artistic project are highly variable, depending on the discipline, the specific nature of the work involved, and the availability of resources from funded projects, students’ sponsoring agencies, or the academic departments. In some cases, students may pay such costs directly. In others, departments may request that funds be deposited in a special account in advance.

Personal Expenses

Health Insurance

The CSU Student Health Insurance Plan is designed to work in conjunction with the student fee-funded services provided at the CSU Health Network. The plan, underwritten by Aetna Life Insurance Company and its affiliates (“AETNA”), provides students with access to comprehensive, high quality care. Plan benefits are provided both within the CSU Health Network and when services are provided off campus, outside the CSU Health Network. Fee-paying students are eligible to enroll in this plan.

Graduate students who are enrolled in less than six (6) RI credits may opt into coverage by completing an enrollment form at the CSU Student Insurance Office (information in the Student Insurance Office before the plan enrollment/cancellation deadline). Graduate students enrolled in LESS THAN six (6) resident instruction (RI) credits will NO LONGER be automatically enrolled.

Students enrolled in six or more resident instruction credit hours are automatically enrolled in the plan and are subject to the mandatory insurance requirement. These students must demonstrate proof of enrollment in comparable insurance in order to opt out via the CSU Student Health Insurance Waiver (http://health.colostate.edu) process. Students who have been granted a waiver in the fall semester will be automatically waived in the spring semester as well. All waiver requests must be submitted by the published enrollment/cancellation deadline.

If you do not waive out of the plan by the enrollment/cancellation deadline, your student account will be billed for the premium. Due to the terms of the insurance carrier, no exceptions can be made. Information about the enrollment/cancellation deadline (http://health.colostate.edu/student-health-insurance) for each semester is available online.

Note for International Students: International students are required to hold health insurance regardless of their enrollment status. You will be automatically enrolled in the CSU Student Health Insurance Plan and must show proof of enrollment in a comparable plan through the waiver process if you wish to opt out.

For more information visit the CSU Health Network (http://www.health.colostate.edu) or the Graduate School (http://graduateschool.colostate.edu/current-students/student-resources/health-insurance) websites.

Living Expenses

Since individual habits and needs vary greatly from individual to individual it is difficult to produce a standard estimate of overall living expenses. Information on housing options and costs is available through Housing and Dining Services (http://housing.colostate.edu) and the Office of Off-Campus Life (http://ocl.colostate.edu/home).

New students should be aware that expenses incurred as a graduate student are likely to be higher than as an undergraduate. The purchase of research supplies, the acquisition of a personal library, attendance of seminars, conferences and meetings, and general change of lifestyle are some of the factors that may account for this.

International students particularly may incur high costs. Many necessary articles cannot be transported as luggage and may have to be purchased after arrival at CSU. Clothing appropriate to the climate may have to be acquired. A detailed estimate of expenses including out-of-state tuition and fees, living expenses, and cost of mandatory health insurance for a full calendar year (two semesters and a summer term) may be obtained from the Office of International Programs (http://www.international.colostate.edu) or emailing isss@colostate.edu.

"In-State Residency" for Tuition Classification Purposes

Student Financial Services (http://sfs.colostate.edu)
Centennial Hall
1065 Campus Delivery
(970) 491-6321
Fax: (970) 491-5010

Classification of students for tuition purposes is governed by State Statute ("tuition law") which sets forth conditions for a student being considered as “in-state” for purposes of tuition classification. The tuition law is contained in sections 23-7-101 to 111, of the Colorado Revised Statutes. Although individuals may be considered state residents for voting or other legal purposes after being in the state for a short period of time, the tuition law specifies additional requirements for classification
as “in-state” for tuition purposes. The tuition law, which applies to all public institutions of higher education in Colorado, is subject to judicial interpretation and change at any time by the Colorado Legislature. CSU must apply the rules set forth in the Colorado Revised Statutes, and is not free to make exceptions except as specifically permitted under the Statute.

Note: This information is considered to be general guidance and is not legal advice. Refer to State Statute to review the actual law.

Definition of "In-State Residency" for Tuition Purposes

Under the Colorado tuition law, the term “in-state” student means: “A student who has been domiciled in Colorado for one year or more immediately preceding the first day of classes for the term for which such status is claimed.” Further the tuition law states: “Attendance at an institution of higher education, public or private, within the state of Colorado shall not alone be sufficient to qualify for domicile in Colorado.”

The Statute states that the applicant has the burden of providing clear and convincing evidence that a Colorado domicile has been established for the required one-year period. CSU may require completion of appropriate forms and additional documentation as necessary to make a determination of domicile. After registration, the initial tuition classification will remain unchanged absent clear and convincing evidence to the contrary.

In-state classification requires a domicile in Colorado for 12 months on or prior to the first day of classes of each semester. “Domicile” is the legal term used to describe the place where a person has chosen to make a true fixed and permanent home. Domicile is made up of two components: physical presence and evidence of intent. Both physical presence and evidence of intent must be established for 12 months on or prior to the first day of classes. A student can only establish domicile in Colorado for tuition purposes if he or she intends to reside permanently in the state and meet the definition of a “Qualified Person.”

Initial residency determination for tuition purposes of any student enrolling at CSU is determined by the Office of Admissions. To be initially considered for in-state classification you must answer all residency questions completely and accurately on the application and submit requested evidence substantiating their claim. Failure to do so will result in classification as out-of-state for tuition purposes.

In-State Status: Other Circumstances

Exceptions to the one-year residence requirement exist for the following:

• Colorado National Guard members
• Active-duty military stationed in Colorado
• Honorably-discharged members of the U.S. armed forces
• Returning active-duty military members
• Canadian military stationed in Colorado
• Employees of companies moving to Colorado receiving government economic incentives
• Western Regional Graduate program enrollees (WICHE)
• A student, other than a nonimmigrant alien who attended a Colorado high school for three years who is admitted into a Colorado Institution of High Education within twelve months after graduation or completing a G.E.D. in Colorado.

For detailed explanation of the requirements for these exceptions, including spouse eligibility, go to CSU's Student Financial Services (http://sfs.colostate.edu/residency) or the Colorado Higher Education Residency Guide (http://highered.colorado.gov/Finance/Residency).

International Students

International students who are lawful permanent residents or who are admitted as refugees are eligible to establish domicile for tuition purposes. Nonimmigrant aliens who are residing in Colorado for purposes other than education may qualify for in-state status after one year of Colorado domicile. A nonimmigrant with the following student visa categories cannot qualify for in-state tuition classification: F-1, F-2, H-3, H-4 (if the visa holder is the spouse or child of an H-3), J-1 and J-2 (if the J-1 visa holder is a student or trainee), M-1 and M-2.

Petition for Reclassification

A petition may be filed if a student wishes to contest out-of-state classification or if the student has subsequently become eligible for in-state status. Petitions will be processed only for students who have been admitted to CSU and currently enrolled for the semester in which they are requesting a change in classification. Please review the Student Financial Services (http://sfs.colostate.edu/residency) website for more information.

A student’s current tuition classification will remain until they have received notification from the Student Financial Services Tuition Classification Officer indicating a residency change has been approved. Students who are petitioning for in-state classification remain responsible for paying their tuition based upon current tuition classification. Students are strongly urged to petition during the “Priority Deadline to Submit Petition” provided on the SFS website in order to receive a response of their tuition classification prior to the beginning of the semester and tuition and fee deadlines.

Petition Process/Deadline

Student Financial Services must receive completed petitions no later than the published deadline date for the semester for which you are petitioning. Deadlines (http://sfs.colostate.edu/residency) are provided on our website. Petitions will not be accepted after the published deadline date and incomplete petitions will not be accepted and/or reviewed for that semester, and your tuition classification and tuition assessment will remain nonresident for that term. Petitioners will be notified of the results of their petition by mail. Please allow up to six weeks for notification. If additional information is required, the additional information must be submitted within 15 days from the original petition unless special arrangements are made with the Tuition Classification Officer.

Decisions made by the Tuition Classification Officer may be appealed by CSU’s Residency Appeals Committee. A student wanting to appeal the decision to the Residency Appeals Committee must contact Student Financial Services no later than two weeks (10 business days) after the date of the letter in which the decision was conveyed to the petitioner. The decision of the Residency Appeals Committee is the final University determination for that specific semester. In addition, there are no provisions in the Tuition Classification Statutes for retroactive compliance.

The fact that you do not qualify for in-state status in any other state does not guarantee in-state status in Colorado; in-state classification is governed solely by Colorado statute. The tuition classification statute places the burden of proof on the petitioner to provide clear and convincing evidence of eligibility.
Any student who provides false information to avoid paying out-of-state tuition may be subject to legal and/or disciplinary actions.

**Enrollment and Academic Records**

- About Credits
- Registration/Schedule Changes
- About Grades
- About Withdrawals
- Class Attendance and Final Exams

**About Credits**

**Enrollment Status**

Enrollment status (full-time, three-quarter time, half-time, less than half-time) is determined by the number of credits which the student has completed or is pursuing for the term in which the verification is requested. Courses from which the student has withdrawn or is auditing are not included. (The enrollment status schedule differs from the full-time/part-time schedule for tuition and fees [http://registrar.colostate.edu/student-resources/tuition-fees].)

**Credit Overload**

Graduate students who wish to register for more than 15 credits per term must have an overload approved and submitted through ARIESweb by their advisor. Requests for graduate students to register for 19 or more credits requires approval from the Graduate School.

**Registration/Schedule Changes**

**Class Schedule**

Class schedule information is available online through RAMweb [https://ramweb.colostate.edu/registrar/Public/Login.aspx] or online [https://ramweb.colostate.edu/registrar/Public/ClassSchedule.aspx] prior to the beginning of registration for a given term. The class schedule provides registration procedures and courses offered for that specific term.

**Registration Process**

Students register for classes, including adding or dropping courses, online through RAMweb [https://ramweb.colostate.edu/registrar/Public/Login.aspx]. The class schedule is available through RAMweb approximately one month prior to the start of registration, allowing students to plan their schedules (a wish list builder is available in RAMweb [https://ramweb.colostate.edu/registrar/Public/Login.aspx]). The class schedule is available to the public under Resources via the CSU website [http://www.colostate.edu], A to Z under Class Schedule.

Before registering for classes, students must complete the Registration Ready portion of the process. In order to communicate quickly and effectively with students, CSU requires each enrolled student to provide an email address at Registration Ready. Students are also required to maintain a current mailing address. Once Registration Ready is complete, and the student's Registration Access Date/Time has arrived (available in RAMweb), a student may register for classes.

Registration and payment deadlines must be met in order for registration to proceed. Students should respond to correspondence from CSU, including email correspondence, in a timely manner to avoid missing crucial deadlines.

**Registration Waitlist**

Registration Waitlists are available for students attempting to register for class sections that are already full. When a class has reached capacity and shows a waitlist is available, students may sign up on the waitlist. Students are e-mailed and texted (if they set their text messaging options to allow Academic and Financial Alerts via RAMweb) when a seat opens in the class. Students then have a 24-hour window to register for the class. If the student does not register, they are taken off the waitlist and a notification goes to the next student on the waitlist.

Please go to RAMweb or the Registrar’s webpage [http://registrar.colostate.edu/registration/registration-waitlist-faqs] for frequently asked questions and answers about the Registration Waitlist.

**Course Overrides**

Even when a class has reached its published enrollment limit, the instructor may give special permission for a student to register in the course. Students should inquire about overrides with the instructor assigned to teach the class or the department offering the course. Overrides are processed electronically via ARIESweb by the instructor or department offering the course. Once granted an override, the student will need to manually enter the CRN (course reference number) into the Add Classes Worksheet in RAMweb [https://ramweb.colostate.edu/registrar/Public/Login.aspx].

**Late Registration**

A Late Registration Charge of $50 (subject to change) is assessed for adding the first course on or after the first day of classes or for late adds after the registration period.

Graduate students who register for Continuous Registration or their first course for the term on or after the first day of the term will be charged a $50 Late Registration Charge.

**Registration Cancellation (Prior to Start of Term)**

Prior to the beginning of the semester, all courses can be canceled via the web registration system on RAMweb [https://ramweb.colostate.edu/registrar/Public/Login.aspx] with no charge.

**Assessment of Tuition and Fees Based on Registration Changes in Full-or-Part-Time Status**

Tuition and fees will be adjusted for students that go above or below the nine-credit assessment cut-off during the add/drop period at the beginning of the semester. The specific dates are listed in the appropriate online class schedule. After this deadline, there is no adjustment in tuition and fees if students drop any portion of the courses for which they are registered.

**Continuous Registration**

All students admitted to a graduate degree program are required to be continuously enrolled in their degree programs in the fall and spring semesters. This policy applies from the time of first enrollment through the graduation term. Students should contact their advisor if they do not plan to register for at least one credit of course work or research. Students graduating in summer term are required to be registered for at least one credit or Continuous Registration (CR). Students registering for CR will be assessed a fee for each semester of CR registration. If Continuous Registration is added on or after the first day of the term, a $50 late registration charge will be applied. See Special Fees.
Students enrolled for Continuous Registration in any term may not be considered enrolled full time for the purposes of, for example, financial aid, student loans, visas, or employment. Moreover, to receive full privileges for the summer term, students must be enrolled either in the summer or for the following fall term.

**Repeating a Course**

Students may register for and complete a course more than once but it can only be used one time to fulfill graduation requirements. The original grade and grades earned in repeated courses are used in calculating grade point averages.

**Credit Load**

The maximum load is 15 credits for graduate students regardless of course level or basis of admission. Credit overload approval can be requested from the Graduate School Office with department head or advisor approval.

Graduate assistants are required to register for at least one credit of course work and/or research during fall and spring terms. Assistants who have an appointment in effect in the summer must register for such credits as the appointing department may require. Students on other forms of financial assistance should register for the number of credits required by the sponsor.

**Schedule Changes and the Add/Drop and Withdrawal Periods**

See Schedule Changes

**Registration Alternatives**

**Independent Study**

Independent study is a type of learning that supplements regular, supervised classroom instruction by permitting the student to carry such learning even further, working independently under necessary and sufficient guidance of a supervising instructor. While details of each independent study project are negotiated by the student and instructor, the expectation is that at least three hours per week of directed effort on the student’s part is required for each credit. Personal contact (face-to-face, telephone, Internet, or other forms of communication) is expected.

The instructor and the student shall specify in writing the requirements the student should fulfill to complete the course, including due date, contact expectations, number of credits, and other pertinent information. The instructor, student, and department head shall sign this statement and retain a copy. Upon completion of the project, a copy or description of the work involved shall be retained in the department for at least seven years.

**Colorado Exchange Program**

See Colorado Exchange Program

**About Grades**

**Traditional Grading - Plus/Minus**

Term grades are reported using the scale below. Faculty use of plus/minus (+/-) grading is optional. Course instructor(s) should indicate on the course syllabus and/or policy statement the grading system used in the course.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade points per credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>Excellent 4.000</td>
</tr>
<tr>
<td>A-</td>
<td>Excellent 3.667</td>
</tr>
<tr>
<td>B+</td>
<td>Good 3.334</td>
</tr>
<tr>
<td>B</td>
<td>Good 3.000</td>
</tr>
<tr>
<td>B-</td>
<td>Good 2.667</td>
</tr>
<tr>
<td>C+</td>
<td>Satisfactory 2.334</td>
</tr>
<tr>
<td>C</td>
<td>Satisfactory 2.000</td>
</tr>
<tr>
<td>D</td>
<td>Poor, but passing 1.000</td>
</tr>
<tr>
<td>F</td>
<td>Failure 0.000</td>
</tr>
</tbody>
</table>

- A grade for a course taken as satisfactory/unsatisfactory may not be converted to a traditional grade for purposes of improving the GPA to meet graduation or scholastic requirements.

Credits for courses graded F are used to compute GPA, but do not count toward graduation.

When an AM is placed before the grade, it indicates a finding of academic misconduct by the student in the particular course. For more information, see Academic Integrity/Misconduct.

Students may contest whether or not an assigned grade was recorded accurately in the educational record by following the procedures described under the Grade Appeal section.

**Student Option Satisfactory/Unsatisfactory**

Satisfactory/Unsatisfactory registration for graduate students is subject to limitations imposed by graduate committees and departments. Required courses listed on the program of study may not be taken on a “student-option satisfactory/unsatisfactory” basis. Courses which are offered “satisfactory/unsatisfactory only” or “instructor option satisfactory/unsatisfactory” are acceptable. Background courses may be taken “student-option satisfactory/unsatisfactory” if department policies permit. Registration for satisfactory/unsatisfactory should be approved by the advisor prior to enrollment and cannot be altered except during the schedule change period. Repeating a course on a satisfactory/unsatisfactory basis for which a previous traditional grade was assigned will not alter the effect of the previous grade on the GPA. For “student-option satisfactory/unsatisfactory” courses:

- A correct satisfactory/unsatisfactory registration including advisor approval is the express responsibility of each student.
- Performance equivalent to a grade of C or better is recorded as S (Satisfactory); performance equivalent to a D or F is recorded as U (Unsatisfactory). Neither the S nor U are used in calculating the CSU grade point average.

Credits not used to compute grade point average (GPA) and not counted toward graduation.

1 Credits not used to compute GPA but counted towards graduation.
2 Credits not used to compute grade point average (GPA) and not counted toward graduation.
• When it is determined that an ineligible student is or has been registered for a satisfactory/unsatisfactory course, a traditional grade will be assigned.

Auditing a Class
A student wanting to attend a class without earning credits may register as an auditor. Auditing a course requires prior approval of the instructor of the course. If an instructor determines that an auditor’s attendance or participation is unsatisfactory, the course will not be recorded on the student’s academic record. Changes to or from audit status must be made during the registration or add/drop period. Tuition and fees are assessed for audited credits. Audits do not count for full-time status for loan deferments, financial aid, etc. Students must register for the course first, then complete the Student Option Satisfactory/Unsatisfactory and Audit Grading form. The form can be found at the Registrar’s Office website (http://registrar.colostate.edu/forms/auditsatisfactory-unsatisfactory-grading-form).

Incompletes
At the discretion of the instructor, a temporary grade of “I” may be given to a student who demonstrates that he/she could not complete the requirements of a course due to circumstances beyond the student’s control and not reasonably foreseeable. A student must be passing a course at the time that an incomplete is requested unless the instructor determines that there are extenuating circumstances to assign an incomplete to a student who is not passing the course. When an instructor assigns an “I”, he or she shall specify in writing the reasons for granting an “I” when the student is not passing the course. The instructor shall retain a copy of this statement in his/her grade records and provide copies to the student and the department head or his or her designee. The student should not register for the course again to complete the coursework. After successful completion of the makeup requirements, incomplete grades will be changed by the instructor of record or the department head, in the absence of the instructor of record. After one year, incomplete grades will be changed to an F (failure) unless the course has been previously completed and a grade change submitted by the instructor or the department head. The temporary grade of “I” must be changed to a grade (e.g. A, B, C, D, F, S, U) prior to the student being awarded his/her diploma from CSU.

Discontinuing a Class (Student Non-Attendance)
If a student discontinues attending a class and has not officially dropped through the Registrar’s Office, the grade of F (failure) is recorded.

Grade Appeals
Instructors are responsible for stating clearly the instructional objectives of the course at the beginning of each term and for evaluating student achievement in a manner consistent with these objectives. Students are responsible for maintaining standards of academic performance established for each course in which they are enrolled. Instructors are responsible for determining and assigning final course grades. Graded examinations, papers, and other materials used as a basis for evaluating a student’s achievement will be available to the student for inspection and discussion.

Students may appeal instructor’s grading decisions. The burden of proof, however, rests with the student to demonstrate that the grading decision was made on the basis of any of the following conditions.

1. A grading decision was made on some basis other than performance and other than as a penalty for academic misconduct.
2. A grading decision was based on standards unreasonably different from those which were applied to other students.
3. A grading decision was based on a substantial, unreasonable, or unannounced departure from previously articulated standards.

Before making an appeal, the student should discuss the situation with the instructor(s) involved in the decision. To appeal a grading decision, the student shall submit a written request to the department head. The request must set forth the basis for the appeal, identifying one or more of the three criteria set forth above.

The request must be submitted (or postmarked, if mailed) no later than thirty (30) calendar days after the first day of classes of the following spring semester for appeal of grades recorded for the fall, and no later than thirty (30) calendar days after the first day of classes of the following fall semester for grades received in the spring or summer semester. If no appeal is filed within this time period, the grade shall be considered final.

Within 30 days of receipt of an appeal, the department head shall forward the appeal to the course instructor(s) who assigned the grade and an appeal committee shall be formed. If the request is received during or shortly before the summer session, when the course instructor(s) who assigned the grade or member of the appeal committee may not be available, the appeal committee will be formed no later than 30 calendar days after the beginning of the following fall semester. The appeal committee shall be composed of two (2) faculty members and two (2) students from within the department and one (1) faculty member from outside the department who shall serve as the chair. All five (5) members of the committee shall be voting members. The procedure for the selection of the members of the appeal committee shall be specified in the department code.

The appeal committee will review the written appeal and response of the instructor(s). They may elect to separately interview both the student and the instructor(s) before rendering a decision. The decision of the appeals committee will be based upon whether one of the conditions for an appeal set forth above has been met. At the conclusion of the deliberations, the committee shall render one of the following decisions:

1. the original grading decision is upheld, or
2. the department chair or designee(s) will reevaluate the student’s achievement of the instructional objectives of the course and assign a grade accordingly.

Written notice of the committee’s decision and the reasons for the decision normally will be sent to the student and the instructor(s) within 30 calendar days of the appointment of the committee. The appeal committee’s decision is the final decision of the University. Written summaries of the hearing and decision, together with a rationale for that decision, shall be provided to the student and the instructor who assigned the grade and shall be retained in the department office for a period of one year.

Semester Grades
Students may access their semester grades through RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx) three business days after the week of final exams of each term.
Transcripts
Transcripts of students’ official academic records are maintained by the Registrar’s Office. Official and unofficial copies of a student’s transcript may be obtained by the student through RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx).

Enrollment or Degree Verification
For verification of enrollment status, term(s) of attendance, or degree awarded, go to RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx). For other verifications contact the Registrar’s Office in Centennial Hall, Room 100.

Degree Conferral
See Degree Conferral

About Withdrawals
Withdrawal from a Course
The course withdrawal period begins after the add/drop period has ended and closes at the end of the eighth week of the term for most courses. A “W” grade notation (withdrawal) will be recorded on the academic record and displayed on the official transcript. See Schedule Changes and the Add/Drop and Withdrawal Periods under Registration/Schedule Changes.

Withdrawal from CSU
University withdrawal (to drop all courses and leave CSU) is different from dropping one or more courses. If the first day of the semester has not yet begun, students may cancel their course schedule through RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx) without any charge. Once classes have started, students who are planning to drop all courses and leave CSU for any reason during the fall or spring term may start the University withdrawal process on RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx) prior to their departure. For tuition assessment appeals, they must contact the Center for Advising and Student Achievement (CASA), in The Institute for Teaching and Learning (TILT), Room 121. Unless the University withdrawal procedure is followed, students are not eligible for any adjustment (if appropriate) of tuition and fees and will receive failing grades in all courses.

Called to Active Military Duty
CSU will assist any student called to active military service with reasonable accommodations and in making the best possible transition. As a primary point-of-contact, students are encouraged to work with the Adult Learner and Veterans Services (http://www.adultstudents.colostate.edu) (ALVS) Office and the Center for Advising and Student Achievement (CASA), The Institute for Learning and Teaching (TILT), Room 121. Unless the University withdrawal procedure is followed, students are not eligible for any adjustment (if appropriate) of tuition and fees and will receive failing grades in all courses.

If the student chooses to withdraw from CSU as a result of the amount of time required away from their studies during military service, upon presentation of military orders, the tuition paid for the semester will be refunded. All students need to request a University withdrawal on RAMweb (https://ramweb.colostate.edu/registrar/Public/Login.aspx) and then contact the Center for Advising and Student Achievement (CASA) to request a tuition assessment appeal.

Students called into active duty while engaged in a degree program will be able to fulfill the Continuous Enrollment Requirement by requesting a leave of absence with their department or program coordinator or through CASA, above, and be enrolled for CR without charge. Students failing to request leave prior to deployment may, upon their return, petition to re-enter their degree program without the cost of the reapplication fee. Students engaged in a distance degree program while on active duty and who wish to enroll/remain enrolled in courses may do so subject to the requirements of the program. The options for a withdrawal or incomplete grade remain, as noted above.

If the student has completed most of the semester in which they are called to active duty, they may work with their individual instructors to assess whether or not incompletes are a viable option. The ALVS Office will assist students in this process. At the discretion of the instructor, a temporary grade of “I” may be assigned to a student passing a course. The student and instructor will complete a contract for course completion. The student called to military duty will have an extended time allowed for course completion, that being one full year after the student has returned to CSU. There are no refunds associated with receiving incompletes and no fees associated with completing courses.

If a student encounters a different scenario during the semester, such as being gone for a limited amount of time, they are encouraged to work with the ALVS Office in order to work on reasonable accommodations in their courses or selected withdrawals from individual courses.

University Withdrawal for Call to Active Duty Process
See University Withdrawal for Call to Active Duty Process.

Retroactive Withdrawal
A student may request that all grades in an academic period (one or more semesters of continuous enrollment) be retroactively removed and be replaced by entries of “W” on his or her transcript. A retroactive withdrawal may be granted only when a student could neither function normally during the academic period nor be reasonably expected to complete a university withdrawal due to extenuating circumstances such as an incident leading to major physical or mental trauma.

Failure to academically perform due to factors such as the following would not generally qualify a student for retroactive withdrawal:

- Bad habits or poor judgment.
- Time management issues.
- Failed relationships/roommate problems.
- Failure to use University resources.
- Ignorance of University policies.

A retroactive withdrawal is not allowed if a student has earned a degree from CSU and the semester in question was used to meet University, college, or departmental requirements for the degree. Generally, requests are not allowed after four years have elapsed since the end of the last semester covered by the request.

Students are allowed two requests for the same period, the second request requiring additional supportive documentation. If granted, assessment of tuition and fees remains unchanged. The student’s academic record will remain unchanged if a request is denied.

A graduate student applying for a retroactive withdrawal must submit a written request with supportive, written documentation from a credible source to the Center for Advising and Student Achievement (http://www.casa.colostate.edu) (CASA), The Institute for Learning and Teaching (TILT), Room 121. The request will be forwarded to the Faculty Council Committee on Scholastic Standards (http://facultycouncil.colostate.edu).
In addition, students must meet with an academic advisor at CASA to review the application process.

Class Attendance and Final Exams
Class Attendance Regulations
See Class Attendance Regulations.

Final Examinations
See Final Examinations.

Amendments to the Bulletin

Specifics on these amendments may be found on the Faculty Council (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) webpage.

Faculty Council (12-1-15 minutes) approved additional wording regarding 100 and 200 level courses taken by graduate students and transfer course grade requirements. The full text of the changes to Scholastic Standards can be found on the Faculty Council Agenda (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) (12-1-15) page 28.

Faculty Council (11-3-15 minutes) approved a wording change regarding the process appointing advisors and committee members. The full text of the changes to The Advisory System can be found on the Faculty Council Agenda (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) (11-3-15) page 45.

Faculty Council (9-1-15 minutes) approved the addition of the Pearson Test of English (PTE) as an acceptable test for English proficiency. The full text of the changes to the Application: International Students in the Admissions Requirements and Procedures section can be found on the Faculty Council Agenda (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) Council Agenda (http://facultycouncil.colostate.edu/faculty-council-meeting-dates-agendas-minutes) (9-1-15) page 127.

May 5, 2015 Faculty Council Revision to The Advisory System, Plan C master’s students - Graduate Study - Requirements for All Graduate Degrees - The Advisory System.

March 4, 2015 Faculty Council Revision to Combined Degree Programs removal from this section – B.5 Combined Degree Programs – references to Track III were updated to Integrated Degree Program (IDP)

February 3, 2015 Faculty Council Revision to Collaborative Degree Program – E.4 Collaborative Degree Program.

December 2, 2014 Faculty Council Revision to Professional Science Master’s – E.2 Master’s Degrees

December 2, 2014 Faculty Council Revision to Appeals – E.1.4 Graduate School Appeals Procedure

December 2, 2014 Faculty Council Revision to Combined Degree Admissions and Track III Admissions to IDP and SDP- D.3 Combined Degree Programs and D.3.1 Track III Admissions

November 4, 2014 Faculty Council Revision to Scholastic Standards – E.1.3 Scholastic Standards

September 2, 2014 Faculty Council Revision to Combined Degree Program – revisions to section B: “The Graduate School”, to section D: “Admission Requirements and Procedures” - D.1 Application: U.S. Citizens or Permanent Residents - D.3 Track III Admissions, section E. “Graduate Study”: E.1.2 Program of Study – and section G. “Tuition, Fees, and Expenses”- G.7 Conditions That Affect the Assess of Charges

September 2, 2014 Faculty Council Revision to TOEFL/IELTS Requirement – D.5 Application: International Students

September 2, 2014 Faculty Council Revision to Graduate Certificate Program – E.6 Graduate Certificate Program

May 20, 2014 Faculty Council Revisions to Track III – The Graduate School B.5, B 5.1, Admission Requirements and Procedures D.1, D.3, D.3.1, Graduate Study E.1.2 and Tuition Fees and Expenses G.7.

April 2, 2013 Faculty Council Revision to New Graduate Degree Programs – The Graduate School B.1

April 2, 2013 Faculty Council Revision to Public Dissemination of Theses and Dissertations – Graduate Study E.5

April 2, 2013 Faculty Council Revision to Credit Requirements – Graduate Student 2.1, Table 1 and E.3.1

March 5, 2013 Faculty Council Revision to Probation Procedures – Scholastic Standards E.1.2

November 5, 2012 Faculty Council Revision to Graduate Assistantships – Financial Support F.2.3

September 4, 2012 Faculty Council Revision to the Probationary Period – Scholastic Standards E.1.3

February 7, 2012 Faculty Council Revision to the Enrollment and Academic Records – Degree Conferal

February 7, 2012 Faculty Council Revision to the Admissions Requirements and Procedures – Application: International Students

October 4, 2011 Faculty Council Revision to the Admissions Requirements and Procedures – Application: International Students

September 8, 2011 Faculty Council Revision to the Admissions Requirements and Procedures - “Application: International Students” Section

April 5, 2011 Faculty Council Revision to the Enrollment and Academic Records – Schedule Changes and the Add/Drop and Withdrawal Periods

April 5, 2011 Faculty Council Revision to the Enrollment and Academic Records – Traditional Grading – Plus/Minus

February 17, 2011 Faculty Council Revisions to the Student Rights and Responsibilities – “Academic Integrity” Section

February 10, 2011 Faculty Council Revisions to the Graduate Study - “Table 2. Summary of Procedures for the Master’s and Doctor of Philosophy Degrees” & “Dissertation and Thesis” Section

February 10, 2011 Faculty Council Revisions to the Graduate Study - “Application: American Citizens”, “Track II Admissions”, & “Application: International Students” Sections

November 18, 2009 Faculty Council Revision to the Graduate Study - "The Advisory System" Section

March 12, 2009 Faculty Council Revision to the Admissions Requirements and Procedures - "Application: American Citizens" Section

March 12, 2009 Faculty Council Revision to the Admissions Requirements and Procedures - "Application: International Students" Section

March 12, 2009 Faculty Council Revisions to the Admissions Requirements and Procedures - "Application: International Students" Section
CONTINUING EDUCATION/CSU ONLINE

Colorado State University Online offers 40 undergraduate and graduate degrees, 20 certificates and training programs, and hundreds of courses that connect students who cannot or choose not to come to campus with CSU’s renowned faculty, research, and curricula. CSU’s online students receive the same education, learn from the same faculty, and earn the same regionally accredited degree as students on campus.

Through CSU Online, more than 10,000 students each year, including thousands of students pursuing their degrees on campus, take online courses to gain a world-class education on a schedule that fits their lives. Learn more about CSU’s online, distance, blended, and off-campus programs and services below.

- Online Degrees, Certificates, and Courses
- Classroom Degree Programs and Courses
  - Admissions
  - Registration and Payment
  - Tuition and Fees
  - Financial Aid
  - Drop/Refund Policy
  - Accessing Online Courses

Online Degrees, Certificates, and Courses

- Graduate Degrees (http://www.online.colostate.edu/degrees/graduate-degrees.dot)
- Graduate Certificates and Training (http://www.online.colostate.edu/certificates/credit-certificates.dot)
- Graduate Courses (http://www.online.colostate.edu/courses/credit/graduate-courses.dot)
- Undergraduate Degrees (http://www.online.colostate.edu/degrees/undergraduate-degrees.dot)
- Undergraduate Certificates and Training (http://www.online.colostate.edu/certificates/credit-certificates.dot)
- Undergraduate Courses (http://www.online.colostate.edu/courses/credit/undergraduate-courses.dot)
- Professional Development/Noncredit Programs (http://www.online.colostate.edu/certificates/noncredit-certificates.dot)
- Digital Badge Programs (http://www.online.colostate.edu/badges)
- Summer Courses (http://www.online.colostate.edu/courses/summer-courses)
- Teacher Education Programs and Courses (http://www.online.colostate.edu/topics-of-study/teacher-education)
- Veterinary Medicine Continuing Education and Credit Courses (http://www.online.colostate.edu/topics-of-study/vetmedonline)
- Free Online Courses (http://www.online.colostate.edu/free-online-courses)
- How Does Online Learning Work? (http://www.online.colostate.edu/faqs/online-learning.dot)

Classroom Degree Programs and Courses

- Graduate Degree Programs (http://www.online.colostate.edu/degrees/graduate-degrees.dot)
- Credit Courses in Denver (http://www.online.colostate.edu/courses/credit?subject_cat=&open_only=false&term_filter=&location_cat=1191/#courselistings), Fort Collins (http://www.online.colostate.edu/courses/credit?subject_cat=&open_only=false&term_filter=&location_cat=39426/#courselistings), or Loveland (http://www.online.colostate.edu/faqs/classroom-locations)
- Professional Development/Noncredit Courses in Denver (http://www.online.colostate.edu/courses/noncredit?subject_cat=&open_only=false&term_filter=&location_cat=1191/#courselistings), Fort Collins (http://www.online.colostate.edu/courses/noncredit?subject_cat=&open_only=false&term_filter=&location_cat=39426/#courselistings), or Loveland (http://www.online.colostate.edu/faqs/classroom-locations)
- Osher Lifelong Learning Institute (http://www.usher.colostate.edu)
- GUEST Program (http://www.online.colostate.edu/answers/services/guest.dot)
- Classroom Locations (http://www.online.colostate.edu/faqs/classroom-locations)

Admissions

- Undergraduate (http://www.online.colostate.edu/faqs/admission/undergraduate)
- Graduate (http://www.online.colostate.edu/faqs/admission/graduate)

Registration and Payment

- Credit Courses and Programs (http://www.online.colostate.edu/faqs/registration/credit)
- Professional Development/Noncredit Courses and Programs (http://www.online.colostate.edu/faqs/registration/noncredit.dot)
- Continuous Registration/Planned Leave

Tuition and Fees

See more at CSU Online (http://www.online.colostate.edu/faqs/tuition-fees.dot).

Financial Aid, including Military Discounts

See more at CSU Online (http://www.online.colostate.edu/faqs/financial-aid.dot).

Drop/Refund Policy

- Credit Courses and Programs (http://www.online.colostate.edu/faqs/policies/drop-policy.dot)
- Professional Development/Noncredit Courses and Programs (http://www.online.colostate.edu/faqs/policies/drop-policy-noncredit.dot)
• Appeals Process (http://www.online.colostate.edu/faqs/policies/appeals.dot)

Accessing Online Courses
• Credit (http://www.online.colostate.edu/current-students/access-online-courses/credit-courses.dot)
• Professional Development/Noncredit (http://www.online.colostate.edu/current-students/access-online-courses/noncredit-courses.dot)
ABOUT CSU

- Colorado State University is one of the nation's top public research universities and continues to be an institution on the rise. The key to our success is a combination of outstanding quality and commitment to excel in all we do.

CSU was founded as the Colorado Agricultural College in 1870, six years before the Colorado Territory was granted statehood, and was one of 68 land-grant colleges established by President Abraham Lincoln's signing of the Morrill Act. Our land-grant tradition of providing a high-quality, affordable higher education to all who have the desire and ability to achieve it runs deep, and CSU remains the "university of choice" for Colorado residents -- more Colorado high-school students choose CSU than any other campus. Thirty percent of the state's science, math, engineering, and technology majors pursue degrees at CSU.

- Our world-class research -- in infectious disease, atmospheric science, clean energy technologies, biomedical sciences, translational medicine, chemistry, environmental science, and more -- attracts more than $300 million in research funding every year. We offer exceptional academic programs, with 72 undergraduate degree programs, 100 graduate degree programs, 26 professional master's degree programs, and our prestigious Professional Veterinary Medicine program. Many of Colorado State's academic programs are ranked among the best in the nation and world.

Faculty at CSU are some of the best in their fields and combine classroom learning with experiential learning in the field and laboratory. More than 5,000 CSU students participate in undergraduate research opportunities every year. Fifty-nine percent of classes have 30 or fewer students, and our top faculty and researchers are in the classroom daily.

The land-grant mission of education, research, and extension permeates our campus community. Two out of every three students participate in some sort of community service during their time at CSU, and the number of students involved with study abroad has increased 70 percent in the past five years. By the time they graduate, more than 86 percent of our seniors have secured employment or continuing education at the time of graduation -- and 78% of graduates are employed in fields related to their major. It's no wonder more that 90 percent of graduates say they would choose CSU again.

- Total enrollment at CSU has grown to more than 32,000 students. In 2014-2015, CSU awarded 7,181 degrees -- and thanks to our commitment to affordability and student aid, 44 percent of our students last year graduated with zero student debt. The University today has more than 207,000 living alumni worldwide.

- CSU educates students both to make a living and to make a difference -- and our faculty transform the world through their research, scholarship, and teaching. This is what it means to be a land-grant university in the 21st century.

- Fort Collins Community

Land Grant Tradition

Our Land-Grant Mission

The idea of the land-grant university arose in the middle of the 19th century around a set of converging social and cultural changes in the United States. In an era of economic, social, and political turmoil, U.S. Representative Justin Morrill, a Vermont native and son of a blacksmith, proposed the notion of government land-grants to support practical public education for the working classes. President Abraham Lincoln signed the first Morrill Act into law on July 2, 1862. This act dictated that proceeds from the sale of land in each state would be invested in a perpetual endowment to support colleges of agriculture and mechanic arts. The signing of the second Morrill Act in 1890, the Hatch Act in 1887 (to establish Agricultural Experiment Stations), and the Smith-Lever Act of 1914 that created the Cooperative Extension Service formed the basis of the land-grant model as it exists today.

The spirit of the Act was, and is, to enable all citizens of the United States to participate in the nation's economic and social progress. After one hundred and fifty years of profound social and economic transformation, the core values embodied in that spirit remain.

Colorado State is a land-grant university. CSU came into existence as part of Lincoln and Morrill's dream to make a great college education available to every American.

To be a land-grant university in the 21st century means:

- Inclusion, Opportunity, and Success: We are proud to provide access to opportunity to anyone with the motivation and ability to earn a degree. With the signing of the Morrill Act, for the first time in history, higher education became broadly open to people from all walks of life. At CSU, we pride diversity and the rich history that different populations bring to the academic community -- as well as the rich history of the land and region on which our university is built.

- Research that Transforms Our World: CSU ranks among the leading research universities in the nation and is home to world-class discovery. CSU research advances the quality of life for people in Colorado and around the world. Our faculty and students lead innovative discovery and scholarship to solve local and global problems and expand our understanding of our world and the challenges that confront it.

- Service to Society: As the birthplace of the Peace Corps, CSU holds a strong belief that innovation can positively impact the quality of life for people worldwide. The people of Colorado State believe service to society and our world is a high calling. Our faculty and staff deploy knowledge and education to address pressing global challenges and improve the quality of life for people in Colorado and around the world, in keeping with our historic commitment to service and engagement. Students also put this value into action through their involvement and service on and off campus, whether collecting cans of food to feed the hungry in Fort Collins, participating in an alternative break, or working with faculty on projects in the developing world.

- Education to Meet the Challenges of Today and Tomorrow: CSU provides a pragmatic, meaningful, and transformation educational experience to prepare the next generation of scientists, artists, educators, and entrepreneurs. CSU alumni use their talents and
expertise to transform our world, and their education is a cornerstone of a prosperous economy. CSU graduates have won Pulitzer Prizes, flown on space shuttle missions, led states and nations, made brilliant scientific discoveries, and had an impact on communities and industries worldwide.

**Excellence Above All:** In all we do, we strive for excellence. CSU is a place where students build academic and personal success; where groundbreaking research is conducted and discovery achieved; where innovation is readily deployed to meet local and world demands; and where alumni celebrate transformative lives and careers. We provide an outstanding, dynamic educational experience as the foundation for student success and retention. As one of the nation’s leading research universities, Colorado State sets a high standard—and aims for excellence in all aspects of its educational, research, and service missions.

**Outreach, Research and Extension**

- Colorado Agricultural Experiment Station
- Colorado State Forest Service
- Colorado Water Institute
- Environmental Learning Center
- Extension

**Colorado Agricultural Experiment Station**

Office in Shepardson, Room 121
(970) 491-6274

Agricultural research has been part of Colorado State University (CSU) since the institution’s beginning. In 1888, the Colorado General Assembly established the Colorado Agricultural Experiment Station (CAES) (http://aes.agsci.colostate.edu) as the contributor to the federally-created state agricultural experiment station system established by the Hatch Act, currently encompassing all fifty states and United States territories.

The CAES is an integral part of CSU and a unit within the College of Agricultural Sciences. The Colorado Agricultural Experiment Station creates and disseminates knowledge related to agriculture and natural resources with the overarching goal of enhancing economic viability and environmental sustainability in ways that are socially acceptable. Further, the CAES applies this knowledge to solving practical problems of producers and consumers.

The CAES supports faculty, staff, and students across CSU who conduct research on crop and livestock production, food systems, and natural resources problems. Our research is conducted in Fort Collins in seven of eight colleges, in more than 15 academic departments, and at seven off-campus research centers located throughout the state. The CAES is not a place but rather is an administrative umbrella that oversees research programs taking place on campus and at seven research centers across Colorado. These research centers are the Agricultural Research, Development and Education Center (ARDEC) in Fort Collins, the Arkansas Valley Research Center in Rocky Ford, the Eastern Colorado Research Center in Akron, the Plainsman Research Center in Walsh, the San Luis Valley Research Center in Center, the Southwestern Research Center in Yellowjacket, and the Western Colorado Research Center with locations in both Orchard Mesa and Fruita.

Agricultural research programs include the traditional areas of producing and processing food products such as wheat, beef, potatoes, fruits, and vegetables, as well as discovering how foods and diets influence human nutrition and health, new kinds of textiles we wear, the ornamental plants and gardens we enjoy, and sustainable use of rangelands where high-quality water comes from and which support grazing livestock and wildlife.

The CAES partners with CSU Extension, industry, schools, and any others who can help get new information and technologies into the hands of those who need it.

**Colorado State Forest Service**

State Office is located at the Foothills Campus, Building 1050
(970) 491-6303

The Colorado State Forest Service (CSFS) (http://csfs.colostate.edu) is a service and outreach agency of the Warner College of Natural Resources and provides staffing for the Division of Forestry within the Colorado Department of Natural Resources. The CSFS serves as the lead state agency for providing forest stewardship and management, fuels reduction and wildfire mitigation assistance to Colorado landowners through 19 district and field offices throughout the state. Every year, the CSFS helps treat thousands of acres of forestland, assisting landowners and communities to help improve forest health and ensure related benefits. The CSFS provides a wide range of forestry services through focused programs that deliver measurable, impactful results, using a non-regulatory approach, strategic partnerships and personalized service. The agency also provides forestry education and outreach to the citizens of Colorado and grows and distributes seedling trees and shrubs for conservation purposes.

**Colorado Water Institute**

- Office in Engineering Building, Room E102
  - (970) 491-6308

The Colorado Water Institute (http://www.cwi.colostate.edu) is a research and outreach agency within the CSU Office of Engagement that connects the water information needs of the state to research faculty and graduate students at CSU as well as other public universities in Colorado. The Water Institute provides research grants to faculty and students, as well as internship opportunities and scholarships. The Colorado Water Institute provides water-related information to the citizens of Colorado via the web, publications, and educational workshops.

**Environmental Learning Center**

- Offices in Natural Resources Building, Rooms 218 and 223
- Program site at 2400 South County Road 9 Ft. Collins, CO 80525
  - (970) 491-1661

Staff of the Environmental Learning Center (ELC) (http://www.csuelc.org) work to connect people with nature by facilitating educational, inclusive and safe experiences in the natural environment. The ELC provides a diversity of programs to groups throughout the community. This includes public schools, scout troops, CSU groups, service organizations, and many others.

**Extension**

Offices in University Square, Room 102
(970) 491-6281

Colorado State University Extension (CSUE) (http://www.ext.colostate.edu) provides information and education that
encourages the application of research-based knowledge in response to local, state, and national issues affecting individuals, families, businesses, and communities of Colorado.

Extension in Colorado was established in 1913 when counties created programs. In 1914 federal legislation created the Extension system nationwide. It was accepted by Colorado’s General Assembly in 1915, and reaffirmed in 1979. It is funded by county, state, and federal appropriations. Extension also functions as the educational arm of the U.S. Department of Agriculture, through each state’s land grant university. CSUE has 54 off-campus offices and serves 62 of Colorado’s 64 counties.

Extension’s outreach educational objectives fall within the scope of their land-grant mission and address high-priority needs and issues in Colorado in the broad areas of agriculture and natural resources, family and consumer sciences, 4-H youth development, and community development. Ongoing program teams focus on critical areas including: strong families, healthy homes; nutrition, health, and food safety; 4-H and youth development; community economic development; natural resources—including water and alternative energy; and competitive and sustainable agriculture systems.

CSU System
Colorado State University System

410 Seventeenth Street, Suite 2440
Denver, CO 80202
(303) 534-6290

The Colorado State University System (http://www.csusystem.edu) has three campuses with distinct roles and missions that together serve the state, region, country, and the world, educating more than 40,000 new and returning scholars annually. Colorado State University in Fort Collins, the System’s flagship, is a doctoral-granting research university and the state’s land-grant institution. Colorado State University-Pueblo is a comprehensive regionally focused university and a federally designated Hispanic-Serving Institution offering both graduate and undergraduate degree programs. CSU-Global Campus is the nation’s first, independent, 100 percent online public university, created to serve adult learners in Colorado and beyond. The CSU System is led by a Chancellor who is also the president of the Fort Collins campus. The Chancellor works with the appointed Board of Governors of the CSU System to further the role and mission of the System universities and ensure exceptional service to Colorado.

Board of Governors of the Colorado State University System

The Board of Governors (http://www.csusystem.edu/board-of-governors/board-members) consists of 15 members, nine of whom are voting members appointed by the Governor, as provided in Colo. Rev. Stat. § 23-30-101. The remaining members represent the component universities of the Colorado State University System with one faculty member and one student leader from each campus.

The Board of Governors fosters development of Colorado State University, Colorado State University–Pueblo, and Colorado State University–Global Campus, and supports these separate and distinct institutions through careful planning and resource development. The Board strives to maintain each institution’s flexibility to address challenges and opportunities that arise as the institutions seek to fulfill their statutory missions, consistent with the policies of the Colorado Commission on Higher Education.

The Board also supports opportunities for cooperation in program and resource sharing among the institutions and facilitates system-wide financial accountability.

Accreditation

All academic and professional degrees and all course credits earned at Colorado State University are accredited by The Higher Learning Commission (https://www.hlc.org) through regional accreditation. Institutional accreditation by the HLC, also known as regional accreditation, provides assurance that course credits and degrees earned at CSU meet rigorous quality standards. Accreditation is a requirement for federal financial aid and may be a requirement for some employment opportunities, professional licensure, and graduate education.

Assessment of Program Quality and Continuous Improvement

Academic degree programs are periodically reviewed through an internal process to assure the relevancy and high quality expected of a CSU degree. Each degree program defines meaningful student learning...
outcomes that identify the specific knowledge, competencies, skills, abilities, and values that students should be able to demonstrate upon completion. Defensible standards for evaluating whether students are achieving those outcomes are established and monitored. Appropriate assessment of student learning outcomes may include both direct and indirect measures (comprehensive exams, thesis projects, internship evaluations, reflective journals, peer comparisons, job placement rates, graduate school acceptance rates etc.). Departments are responsible for the collection and analysis of learning outcomes data and additionally responsible to demonstrate that the findings are used in a process of continuous quality improvement within the degree program.

University Leadership

President’s Cabinet

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<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Web Address</th>
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<tbody>
<tr>
<td>Tony Frank</td>
<td>President</td>
<td><a href="http://www.president.colostate.edu">http://www.president.colostate.edu</a></td>
</tr>
<tr>
<td>Rick Miranda</td>
<td>Provost and Executive Vice President</td>
<td><a href="http://www.provost.colostate.edu">http://www.provost.colostate.edu</a></td>
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<tr>
<td>Brett Anderson</td>
<td>Vice President for Advancement</td>
<td><a href="http://www.supporting.colostate.edu">http://www.supporting.colostate.edu</a></td>
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<tr>
<td>Robin Brown</td>
<td>Vice President for Enrollment and Access</td>
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<tr>
<td>Patrick J. Burns</td>
<td>Vice President for Information Technology, Dean of Libraries</td>
<td><a href="http://www.acns.colostate.edu">http://www.acns.colostate.edu</a></td>
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<tr>
<td>Jim Cooney</td>
<td>Vice Provost for International Affairs</td>
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<tr>
<td>Jodie Reddi Hanzlik</td>
<td>Vice Provost for Graduate Affairs/Dean of the Graduate School</td>
<td><a href="http://www.graduateschool.colostate.edu">http://www.graduateschool.colostate.edu</a></td>
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<td>Blanche M. Hughes</td>
<td>Vice President for Student Affairs</td>
<td><a href="http://www.studentaffairs.colostate.edu">http://www.studentaffairs.colostate.edu</a></td>
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<td>Jason Johnson</td>
<td>Deputy General Counsel, Office of the General Counsel</td>
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<td>Lynn Johnson</td>
<td>Vice President for University Operations &amp; Chief Financial Officer</td>
<td><a href="http://www.operations.colostate.edu">http://www.operations.colostate.edu</a></td>
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<td>Joe Parker</td>
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<td><a href="http://www.csurams.com">http://www.csurams.com</a></td>
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<td>Mary Ontiveros</td>
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<td>Alan S. Rudolph</td>
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<td>Mary Stromberger</td>
<td>Chair, Faculty Council</td>
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<tr>
<td>Lou Swanson</td>
<td>Vice Provost for Engagement/Director of Colorado State University Extension</td>
<td><a href="http://www.outreach.colostate.edu">http://www.outreach.colostate.edu</a></td>
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Cabinet Staff

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<tr>
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<tr>
<td>Mark Gill</td>
<td>Chief of Staff to the President</td>
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<tr>
<td>Kathleen Henry</td>
<td>President and CEO of CSUF/CSURF</td>
</tr>
<tr>
<td>Katie Kalkstein</td>
<td>Executive Assistant to the President</td>
</tr>
<tr>
<td>Cara Neth</td>
<td>Director of Presidential and Administrative Communications</td>
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Fort Collins Community

The Colorado State University main campus is located in Fort Collins, an award-winning city of about 155,000 residents located near the foothills of the Rocky Mountain Front Range. Easy access to bike trails, hiking, skiing, water sports, rafting, fishing, and other outdoor sports make Fort Collins an ideal location for those looking for outdoor adventure and natural beauty.

The county seat of Larimer County, Fort Collins is 65 miles north of Denver on Interstate 25, 45 miles south of Cheyenne, Wyoming, and within an hour’s drive of such major recreational areas as Estes Park, Red Feather Lakes, Horsetooth Reservoir, and several mountain parks, including the 790,000-acre Roosevelt National Forest and Rocky Mountain National Park.

Located at an elevation of 5,000 feet, Fort Collins has a clear, dry atmosphere, more than 300 days of sunshine and generally pleasant temperatures throughout the year. The summer temperature ranges from an average high of 85 to an average low of 52; the winter temperature ranges from an average high of 42°F to an average low of 13°F.

Fort Collins is home to a robust arts and entertainment culture and includes several museums, a vibrant public library district, the civic symphony, and CSU’s own University Center for the Arts. An active University calendar – athletics events, guest speakers, art exhibits, theater, cinema, concerts – adds to community life. This broad spectrum of cultural and outdoor recreational facilities, the excellent climate, and
the mountain surroundings contribute to making Fort Collins an ideal university setting.
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<tr>
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<tr>
<td>Abdel-Ghany, Salah</td>
<td>Assistant Professor</td>
<td>Masters, Zagazig University, Zagazig, Egypt, 1992</td>
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<td>Abdo, Zaid</td>
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<td>Abdunabi, Ramadan</td>
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<td>Aberle, Jennifer</td>
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<td>Antunes, Mauricio</td>
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<td>Masters, Federal University of Vicosa, Brazil, 1995&lt;br&gt;Doctorate, Purdue, 2003</td>
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<td>Aoki, Eric</td>
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<td>Bachelors, Communications, General, California State University, Fresno, 1990&lt;br&gt;Masters, Communications, General, California State University, Fresno, 1992&lt;br&gt;Doctorate, Communications, Other, University of Washington, 1997</td>
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<td>Apodaca, Denise</td>
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<td>Apollin, John</td>
<td>Instructor</td>
<td>Bachelors, University of Tehran, 1998&lt;br&gt;Masters, University of Tehran, 2000&lt;br&gt;Doctorate, Purdue University, 2005</td>
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<td>Arabi, Mazdak</td>
<td>Associate Professor</td>
<td>Bachelors, University of Tehran, 1998&lt;br&gt;Masters, University of Tehran, 2000&lt;br&gt;Doctorate, Purdue University, 2005</td>
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<td>Aragon, Antonette</td>
<td>Associate Professor</td>
<td>Bachelors, Political Science, General, Colorado College, 1990&lt;br&gt;Masters, Speech Teacher Education, Colorado State University, 1993&lt;br&gt;Doctorate, Education, General, Colorado State University, 2003</td>
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<td>Archambault, Nicole</td>
<td>Assistant Professor</td>
<td>Bachelors, University of Wyoming, 1994&lt;br&gt;Masters, University of Montana, 1996&lt;br&gt;Masters, University of California, Los Angeles (UCLA), 2002&lt;br&gt;Doctorate, University of California, Santa Barbara (UCSB), 2009</td>
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<td>Archibeque, Shawn</td>
<td>Associate Professor</td>
<td>Doctorate, Nutritional Sciences, Texas AM, 2003</td>
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<td>Archie, Andre</td>
<td>Associate Professor</td>
<td>Bachelors, Philosophy, Colorado State University, 1996&lt;br&gt;Masters, Philosophy, Duquesne University, 1998&lt;br&gt;Doctorate, Philosophy, Duquesne University, 2002</td>
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<td>Arguesogomesdealmeida, Juan</td>
<td>Associate Professor</td>
<td>Bachelors, Engin., General, University of Sao Paulo - Brazil, 1993&lt;br&gt;Masters, Plant Breeding and Genetics, University of Sao Paulo - Brazil, 1997&lt;br&gt;Doctorate, Biochemistry, Cornell University, 2004</td>
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<td>Aristoff, David</td>
<td>Assistant Professor</td>
<td>Bachelors, Mathematics, university of michigan, 2005&lt;br&gt;Doctorate, Mathematics, University of Texas, 2011</td>
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<td>Arneson, Michelle</td>
<td>Instructor</td>
<td>Bachelors, University of Iowa, 1981&lt;br&gt;Masters, CSU, 1989</td>
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<td>Instructor</td>
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<td>Assetto, Valerie</td>
<td>Professor</td>
<td>Bachelors, Political Science, General, LEHIGH UNIV, 1976&lt;br&gt;Masters, Political Science, General, RICE UNIV, 1980&lt;br&gt;Doctorate, Political Science, General, RICE UNIV, 1984</td>
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| Atadero, Rebecca | Associate Professor | Bachelors, Colorado State University, 2002  
Masters, University of California, San Diego, 2004  
Doctorate, University of California, San Diego, 2006 |
| Athey, Susan | Associate Professor | Bachelors, Mathematical Statistics, VIRGINIA TECH, 1976  
Masters, Business, General, COLO STATE UNIV, 1980  
Doctorate, Management Information Systems and Business Data Processing, U OF ARIZONA, 1987 |
| Atler, Karen | Assistant Professor | Bachelors, Occupational Therapy, Colorado State University, 1980  
Masters, Occupational Therapy, Colorado State University, 1986  
Doctorate, Colorado State University, 2012 |
| Auld, Garry | Professor | Bachelors, Chemistry, General, DREXEL UNIV, 1970  
Masters, Foods and Nutrition Studies, Other, PENN STATE UNIV, 1987  
Doctorate, Foods and Nutrition Studies, Other, PENN STATE UNIV, 1990 |
| Avens, John | Professor | Bachelors, Microbiology/ Bacteriology, SYRACUSE UNIV, 1962  
Masters, Microbiology/ Bacteriology, COLO STATE UNIV, 1969  
Doctorate, Microbiology/ Bacteriology, COLO STATE UNIV, 1972 |
| Avery, Anne | Associate Professor | Bachelors, Mount Holyoke College, MA, 1982  
Professional, University of Pennsylvania, PA, 1990  
Doctorate, Cornell University, NY, 1991 |
| Avery, Jessica | Instructor | Bachelors, Child Growth, Care and Development Studies, Colorado State University, 1999  
Bachelors, French Language and Literature, Colorado State University, 2003  
Masters, English Language and Literature, General, Colorado State University, 2006 |
| Avery, Paul | Associate Professor | Bachelors, Cornell University, 1987  
Professional, University of Pennsylvania, 1991  
Doctorate, Colorado State University, 2002 |
| Ayers, Garrett | Instructor | Bachelors, Western Michigan University, 2001  
Masters, Naropa University, 2009 |
| Azimi-Sadjadi, Mahmood | Professor | Bachelors, Electrical, Electronics and Communication Engin., U OF TEHRAN, 1977  
Masters, Electrical, Electronics and Communication Engin., IMPERIAL COL,UK, 1978  
Doctorate, Electrical, Electronics and Communication Engin., IMPERIAL COL,UK, 1982 |
| Aziz, Asad | Instructor | Doctorate, University of Colorado, 2008 |
| Babbitt, Patricia | Instructor | Bachelors, Linguistics, University of Washington, 1984  
Masters, English Language and Literature, General, Colorado State University, 1994 |
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<td>Bachand, Annette</td>
<td>Associate Professor</td>
<td>Bachelors, University of Tubingen, Germany, 1988</td>
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<td>Masters, University of Massachusetts, 1992</td>
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<td>Bacon, Joel</td>
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<td>Bachelors, Mathematics, Baylor University, 1994</td>
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<td>Doctorate, Musicology and Ethnomusicology, Universität für Musik und darstellende Kunst, 2004</td>
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<td>Bailey, Larissa</td>
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<td>Bachelors, Biology, General, Mesa State College, 1993</td>
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<td>Bachelors, Psychology, General, WILLIAM JEWELL, 1960</td>
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<td>Doctorate, Clinical Psychology, UNIV OF COLO, 1965</td>
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<td>Barnes Keys, Elizabeth</td>
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<td>Doctorate, Atmospheric Sciences and Meteorology, University of Washington - Seattle, 2012</td>
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<td>Barnes, Natalie</td>
<td>Instructor</td>
<td>Bachelors, Painting, Boise State University, 1990</td>
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<td>Barrell, Emily</td>
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<td>Barrett Frisbie, Myra</td>
<td>Assistant Professor</td>
<td>Bachelors, Psychology, General, Stanford University, 1999</td>
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| Barrett, Karen| Professor              | Bachelors, Individual and Family Development Studies, General, CORNELL UNIV, 1977  
Masters, Psychology, General, UNIV OF DENVER, 1981  
Doctorate, Psychology, General, UNIV OF DENVER, 1984 |
| Barrett, Leah | Instructor             | Bachelors, Nutritional Sciences, University of Wisconsin-Madison, 1988  
Masters, Nutritional Sciences, University of Wisconsin-Madison, 1991  
Masters, Social Work, Colorado State University, 1998 |
| Bartels, Randy| Professor              | Bachelors, OKLAHOMA ST, 1997  
Masters, UNIV OF MICH, 1999  
Doctorate, UNIV OF MICH, 2002 |
| Bartlett, Robert| Instructor           | Bachelors, University at Buffalo, 2006  
Professional, University at Buffalo |
| Basaraba, Randall| Professor           | Bachelors, Washington State University, 1981  
Professional, Washington State University, 1985  
Doctorate, Washington State University, 1991 |
| Basile, Vincent| Assistant Professor    | Bachelors, Anthropology, Franklin Marshall College, 1999  
Masters, Science Teacher Education, General, University of Colorado Denver, 2005  
Doctorate, Curriculum and Instruction, University of Colorado - Boulder, 2015 |
| Bass, Luke    | Instructor             |  |
| Bates, Daniel | Associate Professor    | Bachelors, Mathematics, College of Wooster, 2001  
Masters, Mathematics, University of Notre Dame, 2003  
Doctorate, Mathematics, University of Notre Dame, 2006 |
| Bates, Haley  | Associate Professor    | Bachelors, Metal and Jewelry Arts, University of North Texas, 1994  
Masters, Metal and Jewelry Arts, Cranbrook Academy of Art, 2002 |
| Bates, Karin  | Instructor             | Bachelors, Colorado State University  
Masters, Univ of Colorado - Denver |
| Bauerle, William| Professor            | Bachelors, Nursery Operations and Management, Colorado State University, 1995  
Masters, Horticulture Science, University of Washington, 1997  
Doctorate, Plant Physiology, Cornell University, 2001 |
| Beachy-Quick, Dan| Associate Professor  | Bachelors, University of Denver, 1995  
Doctorate, University of Iowa, 2000 |
| Beck, K George| Professor              | Bachelors, Animal Sciences, General, UNIV OF IDAHO, 1975  
Masters, Animal Sciences, General, UNIV OF IDAHO, 1977  
Doctorate, Plant Sciences, General, UNIV OF IDAHO, 1985 |
| Becker, Anthony| Assistant Professor    | Bachelors, Millersville University of Pennsylvania  
Doctorate, Northern Arizona University  
Masters, Georgia State University |
| Becker, Christian| Instructor          | Masters, University of Heidelberg, Germany, 1999  
Doctorate, University of Heidelberg, Germany, 2003  
Doctorate, University of Kaisers Lautern, Germany, 2010 |
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<td>Bedinger, Patricia</td>
<td>Professor</td>
<td>Bachelors, Biology, General, EVERGREEN ST CO, 1975&lt;br&gt;Doctorate, Biochemistry, U CA, SAN FRAN, 1982</td>
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<td>Beecken, Masako</td>
<td>Instructor</td>
<td>Bachelors, Jissen Women's College, Tokyo, 1973&lt;br&gt;Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 1991</td>
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<td>Bejarano, Judith</td>
<td>Instructor</td>
<td>Bachelors, University of Northern Colorado, 1984&lt;br&gt;Masters, University of Colorado, 1989</td>
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<td>Belfiori, Maria</td>
<td>Assistant Professor</td>
<td>Bachelors, Universidad Catolica Argentina, 2001&lt;br&gt;Masters, Universidad Torcuato Di Tella, 2006&lt;br&gt;Doctorate, University of Minnesota, 2013</td>
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<td>Belisle, John</td>
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<td>Bachelors, Colorado State University, 1983&lt;br&gt;Masters, Colorado State University, 1986&lt;br&gt;Doctorate, Texas AM University, 1992</td>
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<td>Bell, Christopher</td>
<td>Associate Professor</td>
<td>Bachelors, Socio-Psychological Sports Studies, Crewe Alsager, 1991&lt;br&gt;Masters, Exercise Sciences/Physiology and Movement Studies, Manchester Metropolitan University, 1994&lt;br&gt;Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Western Ontario, 1999</td>
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<td>Bellows, Laura</td>
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<td>Ben-Hur, Asa</td>
<td>Associate Professor</td>
<td>Bachelors, Physics, General, Hebrew University, Jerusalem, 1993&lt;br&gt;Masters, Physics, General, Hebrew University, Jerusalem, 1995&lt;br&gt;Doctorate, Information Sciences and Systems, Technion - Israel Institute of Technology, 2001</td>
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<td>Benn, Barbara</td>
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<td>Bachelors, Pre-Elementary/Early Childhood/Kindergarten Teacher Education, Shippensburg University, 1979&lt;br&gt;Masters, Education Administration and Supervision, General, University of Denver, 2010</td>
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<td>Benoit, Steven</td>
<td>Assistant Professor</td>
<td>Bachelors, Electrical, Electronics and Communication Engin., Rose-Hulman Institute of Technology, 1990&lt;br&gt;Bachelors, Physics, General, Rose-Hulman Institute of Technology, 1990&lt;br&gt;Masters, Mathematics, Colorado State University, 2006&lt;br&gt;Doctorate, Mathematics, Colorado State University, 2011</td>
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<td>Bernhardt, Chealsea</td>
<td>Instructor</td>
<td>Bachelors, Chemistry, General, PRINCETON UNIV, 1963</td>
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<td>Doctorate, Chemistry, General, CALTECH, 1967</td>
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<td>Bernstein, Elliot</td>
<td>Professor</td>
<td>Bachelors, Sociology, KALAMAZOO COLL, 1962</td>
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<td>Berry, Kenneth</td>
<td>Professor</td>
<td>Bachelors, International Relations and Affairs, Miami University, 1977</td>
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<td>Masters, Teaching English as a Second Language/Foreign Language, Boston University, 1992</td>
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<td>Berry, Nancy</td>
<td>Assistant Professor</td>
<td>Bachelors, French Language and Literature, De Paul University, 1989</td>
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<td>Masters, Development Economics and International Development, University of Denver, 1991</td>
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<td>Bachelors, Mechanical Engin., UNIV OF CALIF, SAN DEIGO, 1980</td>
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<td>Bachelors, Trinity Christian Collge, 1994</td>
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<td>Doctorate, Lund University, Sweden, 2001</td>
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<td>Bachelors, Psychology, General, University of Winnipeg, Canada, 2002 Masters, Psychology, General, University of Victoria, Canada, 2004 Doctorate, Psychology, General, University of Victoria, Canada, 2008</td>
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<td>Bienkiewicz, Bogusz</td>
<td>Professor</td>
<td>Masters, Civil Engin., General, Gdansk Technical University, 1971 Doctorate, Civil Engin., General, Colorado State University, 1981</td>
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<td>Biller, Barbara</td>
<td>Associate Professor</td>
<td>Bachelors, University of California, San Diego, 1985 Professional, University of Wisconsin, Madison, 1993 Masters, University of Illinois, 1997 Doctorate, Biological Immunology, Colorado State University, 2007</td>
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<td>Bachelors, Colorado State University, 2006 Masters, Purdue University, 2009 Doctorate, The University of Texas at Austin, 2012</td>
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<td>Binard, Kristina</td>
<td>Instructor</td>
<td>Bachelors, Business, General, Colorado State University, 1989 Masters, Higher Education Administration, Colorado State University, 1994</td>
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<td>Birmingham, Daniel</td>
<td>Assistant Professor</td>
<td>Bachelors, Economics, Other, Michigan State University, 1998 Masters, Education, General, University of Northern Colorado, 2003 Masters, Elementary, Middle and Secondary Education Administration, University of Northern Colorado, 2006 Doctorate, Teacher Education, Multiple Levels, Michigan State University, 2013</td>
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<td>Birner, Thomas</td>
<td>Associate Professor</td>
<td>Masters, Physics, General, University of Leipzig, Germany, 1999 Doctorate, Atmospheric Sciences and Meteorology, Ludwig-Maximilians University, Munich, Germany, 2003</td>
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<td>Biser-Suarez, Courtenay</td>
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<td>Bachelors, Spanish Language and Literature, Western Maryland College, 1986 Masters, Spanish Language Teacher Education, Univ. Ill., Urbana-Champaign, 1991</td>
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<td>Bjostad, Louis</td>
<td>Professor</td>
<td>Bachelors, Biology, General, WILLIAM MARY, 1973 Doctorate, Entomology, U OF CALIFORNIA, 1978</td>
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<td>Masters, Miscellaneous Physical Sciences, Other, DUKE UNIV, 1981</td>
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<td>Professional, Colorado State University, 1971</td>
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<td>Black, Raymond</td>
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<td>Bachelors, California State University Sacramento, 1999</td>
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<td>Blair, Darrell</td>
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<td>Blake Oliver, Tiffany</td>
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<td>Bachelors, Physical Education Teaching and Coaching, University of Northern Colorado - Mesa, 1970</td>
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<td>Bohn, Anton</td>
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<td>Masters, Mathematics, TECH UNIV DELFT, 1974</td>
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<td>Bohn, Andrea</td>
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<td>Bachelors, Stephens College, 1984</td>
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<td>Boice, Jocelyn</td>
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<td>Bachelors, Mathematics, Smith College, 1999</td>
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<td>Masters, Library Science, Other, Syracuse University, 2013</td>
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<td>Bolukoglu, Anil</td>
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<td>Masters, Agricultural Economics, University of Connecticut, 2003</td>
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<td>Doctorate, Agricultural Economics, University of Connecticut, 2007</td>
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<td>Bone, Jennifer</td>
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<td>Bachelors, Communications, General, Cornell University, 1998&lt;br&gt;Masters, Colorado State University, 2000&lt;br&gt;Doctorate, University of Colorado at Boulder, 2007</td>
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<td>Boone, Randall</td>
<td>Professor</td>
<td>Bachelors, Oregon State University, 1986&lt;br&gt;Masters, University of Maine, 1991&lt;br&gt;Doctorate, Wildlife and Wildlands Management, University of Maine, 1996</td>
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<td>Borak, Thomas</td>
<td>Professor</td>
<td>Bachelors, Physics, General, ST JOHN'S UNIV, 1964&lt;br&gt;Doctorate, Physics, Other, VANDERBILT UNIV, 1969</td>
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<td>Borak, Thomas</td>
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<td>Bachelors, Chemistry, Other, UNIV OF COPENHAGEN, 1997&lt;br&gt;Masters, Chemistry, Other, UNIV OF COPENHAGEN, 1999&lt;br&gt;Doctorate, Environmental Science/ Studies, MONTANA STATE UNIV, 2003</td>
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<td>Borello, Emelie</td>
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<td>Bachelors, Computer and Information Sciences, General, University of Phoenix, 2004&lt;br&gt;Masters, Colorado State University, 2015</td>
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<td>Borky, John</td>
<td>Professor</td>
<td>Bachelors, Catholic Univ of Amer, 1967&lt;br&gt;Masters, MIT, 1969&lt;br&gt;Doctorate, Univ of Michigan, 1977</td>
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<td>Borley, Bradley</td>
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<td>Bachelors, Plant Pathology, University of Wisconsin - Madison, 1998&lt;br&gt;Doctorate, Plant Pathology, University of Wisconsin-Madison, 2006</td>
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<td>Borrayo, Evelinn</td>
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<td>Bachelors, Psychology, General, University of the Ozarks, 1993&lt;br&gt;Masters, Clinical Psychology, University of North Texas, 1997&lt;br&gt;Doctorate, Clinical Psychology, University of North Texas, 1999</td>
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<td>Boscan, Pedro</td>
<td>Associate Professor</td>
<td>Professional, Veterinary Medicine (D.V.M.), Barquisimeto, Venezuela, 1996&lt;br&gt;Doctorate, Medical Physiology, University of Bristol, 2001</td>
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<td>Boucher, Christina</td>
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<td>Bachelors, Mathematics, University of Waterloo, 2002&lt;br&gt;Masters, Computer Science, McGill University, 2005&lt;br&gt;Doctorate, Computer Science, University of Waterloo, 2010</td>
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<td>Bouma, Gerrit</td>
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<td>Bachelors, Environmental Science/ Studies, The Van Hall Institute, 1998&lt;br&gt;Doctorate, Zoology, General, University of Idaho, 2003</td>
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<td>Bachelors, Political Science, General, Queen University, 2007</td>
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<td>Professional, Veterinary Medicine (D.V.M.), COLO STATE UNIV, 1973&lt;br&gt;Masters, Physiology, Human and Animal, COLO STATE UNIV, 1977&lt;br&gt;Doctorate, Colorado State University, 1982</td>
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<td>Boykin, Nancy Jo</td>
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<td>Bradley, Richard</td>
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<td>Bachelors, Physics, General, U OF TORONTO, 1979&lt;br&gt;Doctorate, Physics, General, STANFORD UNIV, 1985</td>
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| Bradley, Thomas    | Associate Professor| Bachelors, Univ of California, 2000  
Masters, Mechanical Engineering, 2003  
Doctorate, Georgia Inst of Tech, 2008 |
| Brady, Shawn       | Instructor         | Bachelors, Philosophy, University of North Florida, 2007  
Masters, Philosophy, Colorado State University, 2010 |
| Brady, Tracy       | Instructor         | Bachelors, American (United States) History, University of Colorado, 1984  
Masters, American (United States) History, Colorado State University, 1994  
Doctorate, American (United States) History, University of Colorado, 2004 |
| Bramblett, Russell | Instructor         | Bachelors, Columbia College of Missouri, 2008  
Masters, University of Colorado, 2012 |
| Brandenburg, Tara  | Instructor         | Bachelors, Columbia College of Missouri, 2008  
Masters, University of Colorado, 2012 |
| Brandl, Alexander  | Associate Professor| Bachelors, Physics, General, University of New Mexico, 1996  
Masters, Physics, General, University of New Mexico, 1999  
Doctorate, Physics, General, University of New Mexico, 2002 |
| Brandt, Ricky      | Instructor         | Bachelors, Columbia College, Aurora, CO, 1998  
Masters, Univ of Colorado, Denver, 2005 |
| Braun, Barry       | Professor          | Bachelors, Biology, General, University of Pennsylvania, 1982  
Masters, Exercise Sciences/Physiology and Movement Studies, University of Massachusetts-Amherst, 1990  
Doctorate, Nutritional Sciences, University of California-Berkeley, 1993 |
| Braunstein, Elissa | Associate Professor| Bachelors, Development Economics and International Development, Cornell University, 1988  
Masters, Development Economics and International Development, University of California at San Diego, 1992  
Doctorate, International Economics, University of Massachusetts, 2000 |
| Brazile, William   | Associate Professor| Bachelors, Biology, General, University of Southern Colorado, 1990  
Masters, University of Southern Colorado, 1992  
Doctorate, Environmental Health, Colorado State University, 1996 |
| Breidt, F Jay      | Professor          | Bachelors, Mathematical Statistics, College of Idaho, 1987  
Masters, Mathematical Statistics, Colorado State University, 1989  
Doctorate, Mathematical Statistics, Colorado State University, 1991 |
| Brennan, Carol     | Professor          | Bachelors, Microbiology/Bacteriology, U OF UTAH, 1964  
Doctorate, Molecular Biology, U OF CALIFORNIA, 1968 |
| Brennan, Patrick   | Professor          | Bachelors, National Univ of Ireland, 1961  
Masters, National Univ of Ireland, 1962  
Doctorate, Trinity College, Dublin, 1965 |
| Brick, Mark        | Professor          | Bachelors, Agronomy and Crop Science, U OF WISCONSIN, 1972  
Masters, Agronomy and Crop Science, UNIV OF ARIZONA, 1975  
Doctorate, UNIVERSITY OF MINNESOTA, 1980 |
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<td>Bright, Janice</td>
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<td>Bachelors, University of Michigan, 1972 Masters, Biochemistry, University of Maryland, 1976 Professional, Veterinary Medicine (D.V.M.), Purdue University, 1980 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Florida, 1983</td>
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<td>Doctorate, Plant Pathology, The Ohio State University, 2008</td>
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<td>Brothers, Allyson</td>
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<td>Bachelors, Athletic Training and Sports Medicine, Colorado State University, 2013 Masters, Basic Medical Sciences, Other, Colorado State University, 2014</td>
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<td>Brown, Mark</td>
<td>Assistant Professor</td>
<td>Bachelors, Natural Resources Management and Protective Services, Other, Colorado State University, 1999 Masters, Medical Biochemistry, Georgetown University, 2002 Doctorate, Agricultural Animal Breeding and Genetics, University of Texas, 2007</td>
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<td>Bruemmer, Jason</td>
<td>Professor</td>
<td>Bachelors, Animal Sciences, General, Texas AM University, 1987 Masters, Physiology, Human and Animal, Texas AM University, 1991 Doctorate, Agricultural Animal Physiology, New Mexico State University, 1996</td>
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<td>Brummer, Joe</td>
<td>Associate Professor</td>
<td>Bachelors, Range Science and Management, Colo State Univ, 1984 Masters, Range Science and Management, Oklahoma State Univ, 1986 Doctorate, Range Science and Management, Univ of Nebraska, 1994</td>
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<td>Bubar, Roe</td>
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<td>Bachelors, Psychology, General, University of New Hampshire, 1980 Doctorate, Law (L.L.B., J.D.), University of Colorado, 1987</td>
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<td>Bachelors, Biology, General, Cameron University, 1976 Masters, Botany, General, Oklahoma State University, 1980 Doctorate, Food Sciences and Tech, Colorado State University, 2007</td>
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<td>Burgchardt, Carl</td>
<td>Professor</td>
<td>Bachelors, Speech and Rhetorical Studies, PENN STATE UNIV, 1975 Masters, Communications, Other, U OF WISCONSIN, 1977 Doctorate, Communications, Other, U OF WISCONSIN, 1982</td>
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<td>Bachelors, Allegheny College, 1990 Professional, University of Texas, Austin, 1995 Doctorate, Oregon State University, 2001</td>
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<td>Burns, Timothy</td>
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<td>Butler, Sharon</td>
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<td>Professional, Colorado State University, 1986</td>
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<td>Button, Richard</td>
<td>Instructor</td>
<td>Bachelors, Penn State University, 1986 Masters, New York University, 1994</td>
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<td>Byers, Stacey</td>
<td>Associate Professor</td>
<td>Bachelors, Metallurgical Engin., University of Missouri - Rolla, 1989 Professional, Veterinary Medicine (D.V.M.), Washington State University, 2005 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Washington State University, 2009</td>
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<td>Byrne, Patrick</td>
<td>Professor</td>
<td>Bachelors, Biology, General, Wahington University, 1970 Masters, Horticuture Science, University of Missouri, 1978 Doctorate, Agronomy and Crop Science, UNIVERSITY OF MISSOURI, 1987</td>
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<td>Byrne, Zinta</td>
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<td>Bachelors, Computer Science, California State University, Hayward, 1986 Masters, Industrial and Organizational Psychology, Colorado State University, 1999 Doctorate, Industrial and Organizational Psychology, Colorado State University, 2001</td>
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<td>Callahan, Gerald</td>
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<td>Bachelors, Biology, General, UNIV OF UTAH, 1969 Doctorate, Pathology, Human and Animal, UNIV OF UTAH, 1974</td>
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<td>Callan, Robert</td>
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<td>Professional, Veterinary Medicine (D.V.M.), Oregon State University, 1986 Masters, Physiology, Human and Animal, Utah State University, 1988 Doctorate, Virology, University of Wisconsin, 1996</td>
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<td>Campbell, Terry</td>
<td>Associate Professor</td>
<td>Bachelors, Biology, General, Kansas State College of Pittsburg, 1972 Masters, Animal Sciences, General, Kansas State University, 1975 Professional, Veterinary Medicine (D.V.M.), Kansas State University, 1979 Doctorate, Pathology, Human and Animal, Kansas State University, 1987</td>
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<td>Instructor</td>
<td>Masters, Entomology, Colorado State University, 2007</td>
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<td>Cannon, Joseph</td>
<td>Professor</td>
<td>Bachelors, Marquette University, 1982 Doctorate, University of North Carolina at Chapel Hill, 1992</td>
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<td>Cappa, Jennifer</td>
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<td>Cafaro, Philip</td>
<td>Professor</td>
<td>Bachelors, University of Chicago, 1984 Masters, University of Georgia, 1988 Doctorate, Philosophy, Boston University, 1997</td>
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<tr>
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<td>Carasson, Martin</td>
<td>Professor</td>
<td>Bachelors, Communications, General, Texas AM, 1994&lt;br&gt;Masters, Texas AM 1998&lt;br&gt;Doctorate, Communications, General, Texas A M, 2004</td>
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<td>Carlson, Clay</td>
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<td>Bachelors, Chemical Engin., University of Wisconsin, 1982&lt;br&gt;Masters, Civil Engin., General, Colorado State University, 1992&lt;br&gt;Doctorate, Civil Engin., General, University of Colorado, 1996</td>
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<td>Carlson, Laurie</td>
<td>Associate Professor</td>
<td>Bachelors, English Language and Literature, General, Moorhead State University, 1985&lt;br&gt;Masters, College/ Postsecondary Student Counseling and Personnel Services, Western Washington University, 1993&lt;br&gt;Doctorate, Counselor Education Counseling and Guidance Services, University of Arkansas, 2000</td>
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<td>Carlson, Linda</td>
<td>Instructor</td>
<td>Bachelors, Consumer Economics and Science, PENN STATE, 1971&lt;br&gt;Masters, Clothing/Apparel and Textile Studies, COLO STATE UNIV, 1988</td>
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<td>Carlyon, Jonathan</td>
<td>Associate Professor</td>
<td>Bachelors, Spanish Language and Literature, Univ. of Connecticut-Storrs, 1995&lt;br&gt;Masters, Spanish Language and Literature, Univ. of Connecticut, 1998&lt;br&gt;Doctorate, Spanish Language and Literature, Univ. of Connecticut-Storrs, 2003</td>
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<td>Carnevale, Elaine</td>
<td>Professor</td>
<td>Bachelors, Colorado State University, 1981&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1985&lt;br&gt;Masters, Physiology, Human and Animal, Colorado State University, 1989&lt;br&gt;Doctorate, Physiology, Human and Animal, University of Wisconsin, 1993</td>
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<td>Carolan, Michael</td>
<td>Professor</td>
<td>Bachelors, University of Iowa, 1997&lt;br&gt;Masters, Iowa State University, 1999&lt;br&gt;Doctorate, Sociology, Iowa State University, 2002</td>
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<td>Casado, Banghwa</td>
<td>Associate Professor</td>
<td>Bachelors, Sociology, Georgia State University, 1998&lt;br&gt;Masters, Social Work, University of Houston, 2000&lt;br&gt;Doctorate, Social Work, University of Houston, 2006</td>
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<td>Casterella, Gretchen</td>
<td>Associate Professor</td>
<td>Bachelors, University of Florida, Gainesville, 1986&lt;br&gt;Masters, University of Colorado, Boulder, 1991&lt;br&gt;Doctorate, University of Colorado, Boulder, 1995</td>
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<td>Casterella, Jeffrey</td>
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<td>Castillo, Daniela</td>
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<td>Caton, Deborah</td>
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<td>Bachelors, Mathematics, University of Milano, 1999 Professional, Mathematics, University of Utah, 2005</td>
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<td>Cavanagh, Amanda</td>
<td>Instructor</td>
<td>Bachelors, Biology, General, Georgetown University, 2007 Professional, Veterinary Medicine (D.V.M.), Auburn University, 2012</td>
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<td>Cavdar, Gamze</td>
<td>Associate Professor</td>
<td>Bachelors, International and Comparative Education, Ankara University, 1994 Doctorate, International and Comparative Education, University of Utah, 2006</td>
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<td>Cespedes, Karina</td>
<td>Assistant Professor</td>
<td>Bachelors, Rutgers University, 1997 Masters, Berkeley, 1999 Doctorate, Berkeley, 2007</td>
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<td>Chaffee, Virginia</td>
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<td>Bachelors, Southwest Missouri State University Masters, Humboldt State University</td>
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<td>Champ, Joseph</td>
<td>Associate Professor</td>
<td>Doctorate, Journalism and Mass Communication, Other, University of Colorado-Boulder, 2001</td>
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<td>Chang, Chung-Fu</td>
<td>Professor</td>
<td>Masters, Dance, University CA, Irvine, 1998</td>
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<td>Instructor</td>
<td>Bachelors, Individual and Family Development Studies, General, Colorado State University, 2011</td>
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<td>Associate Professor</td>
<td>Doctorate, Mathematics, University of Washington, 1997</td>
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<td>Chavez, Jose</td>
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<td>Bachelors, Agricultural Engineerin, 1992 Masters, Irrigation Engineering, 1999 Doctorate, Biological Ag Engineering, 2005</td>
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<td>Chen, Chaoping</td>
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<td>Bachelors, Biochemistry, Nanjing University, 1987 Masters, Genetics, Plant and Animal, Chinese Academy of Science, 1990 Doctorate, Microbiology/ Bacteriology, Purdue University, 1999</td>
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<td>Chen, Eugene</td>
<td>Professor</td>
<td>Bachelors, Shangrao Teachers College, 1985 Masters, Nankai University, 1988 Doctorate, University of Massachusetts-Amherst, 1995</td>
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<td>Chen, Junwen</td>
<td>Assistant Professor</td>
<td>Doctorate, University of Georgia, 2011</td>
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<td>Chen, Suren</td>
<td>Associate Professor</td>
<td>Bachelors, Tung Ji University, 1994 Masters, Tung Ji University, 1997 Doctorate, Louisiana State University, 2004</td>
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<td>Cheney, Margaret</td>
<td>Professor</td>
<td>Bachelors, Mathematics, Oberlin College, 1976</td>
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<td>Cheng, Antony</td>
<td>Professor</td>
<td>Bachelors, Political Science, General, Whitman College, 1990 Masters, Forestry, General, University of Minnesota, 1993 Doctorate, Forest Management, Oregon State University, 1999</td>
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<td>Chermack, Thomas</td>
<td>Associate Professor</td>
<td>Bachelors, Human Resources Management, Other, University of Minnesota, 1999 Doctorate, Human Resources Management, Other, University of Minnesota, 2003</td>
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<td>Chicco, Adam</td>
<td>Associate Professor</td>
<td>Bachelors, Business Management and Administrative Services, Other, Marietta College, 1993 Masters, Exercise Sciences/Physiology and Movement Studies, Temple University, 1999 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Northern Colorado, 2004</td>
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<td>Chitsaz, Hamid</td>
<td>Assistant Professor</td>
<td>Bachelors, Computer Science, Sharif University of Technology, 2001 Masters, Mathematics, Other, Sharif University of Technology, 2001 Masters, Mathematics, University of Illinois, 2006 Doctorate, Computer Science, University of Illinois, 2008</td>
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<td>Chiu, Chuchang</td>
<td>Instructor</td>
<td>Bachelors, Journalism, Chengchi University, Taiwan, 1979 Masters, Mass Communications, University of Minnesota, 1982</td>
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<td>Choi, Eunhee</td>
<td>Assistant Professor</td>
<td>Bachelors, Political Science, General, Kyunghee University, Seoul, South Korea, 2004 Masters, Social Work, Yonsei University, Seoul, South Korea, 2007 Doctorate, Social Work, University of Pittsburgh, 2013</td>
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<td>Choi, Jane</td>
<td>Associate Professor</td>
<td>Bachelors, Parsons School of Design, 1997 Masters, Landscape Architecture, Harvard</td>
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<td>Choi, Young Eun</td>
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<td>Chong, Edwin</td>
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<td>Bachelors, Graphic Design, Commercial Art and Illustration, Iowa State University, 1981 Masters, Visual and Performing Arts, Colorado State University, 1986</td>
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<td>Christen, Cindy</td>
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<td>Christensen, Scott</td>
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<td>Bachelors, Graphic Design, Commercial Art and Illustration, Iowa State University, 1981 Masters, Visual and Performing Arts, Colorado State University, 1986</td>
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<td>Christian, Angela</td>
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<td>Christian, Lee</td>
<td>Instructor</td>
<td>Bachelors, Radio and Television Broadcasting, University of Wyoming, 1984</td>
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<td>Doctorate, Law (LL.B., J.D.), University of Wyoming, 1989</td>
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<td>Chung, Hye</td>
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<td>Bachelors, Ewha Women's University, Seoul, Korea, 1994</td>
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<td>Clark, Jon</td>
<td>Professor</td>
<td>Bachelors, Business Administration and Management, General, MICH STATE UNI</td>
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<td>Doctorate, Management Information Systems and Business Data Processing, CASE WESTERN RE, 1977</td>
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<td>Clark, Maggie</td>
<td>Assistant Professor</td>
<td>Bachelors, Miami University, Oxford, OH, 1999</td>
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<td>Clark, Nathan</td>
<td>Instructor</td>
<td>Bachelors, Agriculture/Agricultural Sciences, General, Michigan State Univer</td>
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<td>2000 Certificate, University of Arizona, 2001</td>
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<td>Clay, Colin</td>
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<td>Cleary, Anne</td>
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<td>Bachelors, Psychology, General, John Carroll University, 1997</td>
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<td>Clegg, Benjamin</td>
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<td>Clements, William</td>
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<td>Clementz, Joshua</td>
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| Clemons, Stephanie | Professor       | Bachelors, Interior Design, MICHIGAN STATE, 1979  
Masters, Interior Environments, UTAH STATE UNIV, 1987  
Doctorate, Higher Education Administration, Colorado State University, 1998 |
| Cleveland, Jeanette | Professor       | Bachelors, Psychology, General, Occidental College, 1977  
Masters, Industrial and Organizational Psychology, The Pennsylvania State University, 1979  
Doctorate, Industrial and Organizational Psychology, The Pennsylvania State University, 1982 |
| Cloud, Douglas  | Assistant Professor |                                                                                                    |
| Coates, Tabitha | Instructor       | Bachelors, Psychology, Other, Virginia Tech, 2005  
Masters, Industrial and Organizational Psychology, CUNY Baruch College, 2008 |
| Coats, Jennifer | Assistant Professor | Doctorate, Texas A M University, 1997 |
| Coatsworth, James | Professor       | Bachelors, Psychology, General, Harvard University, 1983  
Doctorate, Clinical Psychology, University of Minnesota, 1991 |
| Cohen, Robert   | Professor        | Bachelors, Biochemistry, University of California, Berkeley, 1974  
Doctorate, Biochemistry, University of California, Berkeley, 1980 |
| Coke, Pamela    | Associate Professor | Bachelors, Univ. of Northern Iowa, 1991  
Doctorate, Univ. of Iowa, 2002 |
| Cole, Kathryn   | Instructor       | Bachelors, Elementary Teacher Education, University of Northern Colorado, 1989  
Masters, Education Administration and Supervision, General, University of Phoenix, 2002 |
| Cole, Patricia  | Associate Professor | Bachelors, Biology, General, ST OLAF COLL, 1972  
Professional, Veterinary Medicine (D.V.M.), U OF MINNESOTA, 1980  
Doctorate, Veterinary Medicine (D.V.M.), U OF MINNESOTA, 1988 |
| Coleman, Robert | Instructor       | Bachelors, Forestry, General, CSU, 1977  
Masters, Forestry, General, CSU, 1982 |
| Coleman, Stephen | Assistant Professor | Bachelors, Agriculture/ Agricultural Sciences, General, University of Kentucky, 2003  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Kentucky, 2006  
Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), University of Kentucky, 2011 |
| Collett, Jeffrey | Professor        | Bachelors, Chemical Engin., MIT, 1984  
Masters, Environmental/ Environmental Health Engin., CA INST TECH, 1985  
Doctorate, Environmental/ Environmental Health Engin., CA INST TECH, 1989 |
| Collins, Deana  | Instructor       | Bachelors, Sociology, University of Northern Colorado, 2000  
Masters, Social Work, Colorado State University, 2010 |
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<td>Collins, Sayuri</td>
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<td>Bachelors, Kagawa University, Japan, 1983</td>
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<td>Conner, Bradley</td>
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<td>Conroy, Samantha</td>
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<td>Cook, James</td>
<td>Instructor</td>
<td>Bachelors, Henderson State University, 1987</td>
<td>Masters, Business Administration and Management, General, Henderson State University, 1989</td>
<td>Doctorate, Higher Education Administration, University of Arkansas</td>
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<td>Cooley, Daniel</td>
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<td>Bachelors, Mathematics, University of Colorado, 1994</td>
<td>Masters, Applied Mathematics, General, University of Colorado, 2002</td>
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<td>Cooner, Donna</td>
<td>Professor</td>
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<td>Cooper, Leroy</td>
<td>Instructor</td>
<td>Bachelors, Biology, General, MIT/ Cambridge, 1959</td>
<td>Masters, Philosophy, Columbia University, NYC, 1968</td>
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<td>Cooperman, Matthew</td>
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<td>Bachelors, Colgate University, 1986</td>
<td>Masters, University of Colorado, 1992</td>
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<td>Masters, University of Arizona, 2003</td>
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<td>Correas, Ignacio</td>
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| Costanigro, Marco | Associate Professor  | Bachelors, Agricultural Business and Management, General, University of Bologna, Italy, 1974  
|                   |                      | Doctorate, Agricultural Economics, Washington State University, 2007  
|                   |                      | Masters, Washington State University, 2007                                                |
| Cotrufo, Maria    | Professor            | Bachelors, Biology, General, University of Naples, Italy, 1991  
|                   |                      | Doctorate, Soil Sciences, Lancaster Univ/Institute of Terrestrial Ecology, UK, 1995         |
| Cottrell, Stuart  | Associate Professor  | Bachelors, Western Illinois University, 1980  
|                   |                      | Masters, Florida International University, 1987  
|                   |                      | Doctorate, Pennsylvania State University, 1993                                            |
| Countryman, Amanda| Assistant Professor  | Bachelors, Agricultural Economics, University of Arizona, 2005  
|                   |                      | Masters, Agricultural Economics, Texas AM University, 2007  
|                   |                      | Doctorate, Agricultural Economics, Purdue University, 2010                                |
| Covino, Timothy   | Assistant Professor  | Doctorate, Environmental Science/Studies, Montana State University, 2012                  |
| Crain, Tori       | Assistant Professor  | Bachelors, University of Maryland, College Park                                            |
| Crair, Stuart     | Instructor           | Bachelors, University of Arizona, 1993  
|                   |                      | Masters, Arizona State University, 1994  
|                   |                      | Doctorate, Arizona State University, 1997                                                |
| Crans, Debbie     | Professor            | Bachelors, Chemistry, General, University of Copenhagen, 1978  
|                   |                      | Masters, Chemistry, General, University of Copenhagen, 1980  
|                   |                      | Doctorate, Organic Chemistry, HARVARD UNIV, 1985                                          |
| Cranshaw, Whitney | Professor            | Bachelors, Biology, General, HAMPSHIRE COLL, 1976  
|                   |                      | Masters, Entomology, U OF MINNESOTA, 1979  
|                   |                      | Doctorate, Entomology, U OF MINNESOTA, 1981                                                |
| Crawford, Sarita  | Instructor           | Bachelors, English Language and Literature/Letters, Other, University of Colorado - Colorado Springs, 1993  
|                   |                      | Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 1995 |
| Cricks, Dean      | Professor            | Doctorate, University of Western Ontario, 1989                                            |
| Crooks, Kevin     | Professor            | Bachelors, Zoology, General, Colorado State University, 1989  
|                   |                      | Masters, Ecology, Univ of Calif - Santa Cruz, 1994                                        |
|                   |                      | Doctorate, Biology, General, Univ of California - San Diego, 1999                         |
| Cross, Jennifer   | Associate Professor  | Bachelors, Sociology, Colorado State University, 1993  
|                   |                      | Masters, Sociology, U. Calif-Davis, 1996                                                   |
|                   |                      | Doctorate, Sociology, U.Calif-Davis, 2001                                                  |
| Crowley, John     | Assistant Professor  | Bachelors, Communications, General, University of New Hampshire, 2004  
<p>|                   |                      | Masters, Communications, General, San Diego State University, 2006                          |
|                   |                      | Doctorate, Communications, General, University of Washington, 2012                         |
| Crozier, Clarissa | Instructor           | Bachelors, Biology, General, Boston College, 1980                                         |
| Cuddemi, Joseph   | Instructor           | Bachelors, Biology, General, Boston College, 1980                                         |
|                   |                      | Masters, Mathematics Teacher Education, Northern Arizona University, 1985                 |
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<td>Bachelors, Pre-Veterinary Studies, Colorado State University, 1985&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1988&lt;br&gt;Doctorate, Pathology, Human and Animal, Colorado State University, 1991</td>
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<td>Bachelors, Biology, General, University of Northern Iowa, 1983&lt;br&gt;Professional, Medicine (M.D.), University of Iowa, 1988</td>
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<td>DeGroote, Mary Ann</td>
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<td>Bachelors, Elementary Teacher Education, University of Montana, 2004&lt;br&gt;Masters, Curriculum and Instruction, University of Phoenix, 2006</td>
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| Deines, Susan      | Associate Professor | Bachelors, Microbiology/ Bacteriology, CSU, 1979  
|                    |                | Masters, Microbiology/ Bacteriology, CSU, 1994                           |
| Delahunt, Gerald   | Professor      | Bachelors, English Literature (British and Commonwealth), UNIV COL DUBLIN, 1968  
|                    |                | Masters, Linguistics, UNIV COL DUBLIN, 1970                            
|                    |                | Doctorate, Linguistics, U OF CALIFORNIA, 1981                         |
| Delcambre, Gretchen| Assistant Professor | Bachelors, Chemistry, General, Louisiana State University, 2005      
|                    |                | Professional, Veterinary Medicine (D.V.M.), Louisiana State University, 2009 |
| Delcambre, Jeremy  | Assistant Professor | Bachelors, Biology, General, University of Louisiana at Monroe, 2002    
|                    |                | Masters, Biology, General, University of Louisiana at Monroe, 2005    
|                    |                | Professional, Veterinary Medicine (D.V.M.), Louisiana State University, 2009 |
| DeLosh, Edward     | Associate Professor | Bachelors, Psychology, General, Northwestern University, 1992   
|                    |                | Masters, Cognitive Psychology and Psycholinguistics, Purdue University, 1994  
|                    |                | Doctorate, Cognitive Psychology and Psycholinguistics, Purdue University, 1996 |
| DeLuca, Jennifer   | Associate Professor | Bachelors, Biology, General, University of North Carolina, Chapel Hill, 1994  
|                    |                | Doctorate, Cell and Molecular Biology, Other, University of California, Santa Barbara, 2000 |
| Deming, Monica     | Instructor     | Bachelors, Graphic Design, Commercial Art and Illustration, University of Nebraska, 1988  
|                    |                | Masters, Drawing, Colorado State University, 1996                      |
| DeMirjyn, Maricela | Associate Professor | Bachelors, University of California, Santa Barbara, 1995   
|                    |                | Masters, San Diego State University, 2000                             
|                    |                | Doctorate, University of California, Santa Barbara, 2005              |
| Denning, A         | Professor      | Bachelors, Geology, UNIV OF MAINE, 1984                                 
|                    |                | Masters, Atmospheric Sciences and Meteorology, CSU, 1993               
|                    |                | Doctorate, Atmospheric Sciences and Meteorology, CSU, 1995            |
| Denniston, David   | Associate Professor | Doctorate, Animal Sciences, General, New Mexico State University, 2001 |
| DeTienne, Dawn     | Professor      | Bachelors, University of Northern Colorado, 1991                       
|                    |                | Masters, Colorado State University, 1999                              
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<td>Devereaux, Constance</td>
<td>Associate Professor</td>
<td>Masters, Claremont Graduate University</td>
<td>1999</td>
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<td>2003</td>
<td>Masters, Antioch University, Los Angeles</td>
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<td>Dewey, Michael</td>
<td>Instructor</td>
<td>Bachelors, Microbiology/ Bacteriology, U. of Wyoming</td>
<td>1966</td>
<td>Doctorate, Microbiology/ Bacteriology, U of Pennsylvania</td>
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<td>Deyoung, Wendy</td>
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<td>Bachelors, Health and Physical Education, General, University of Northern Colorado</td>
<td>1982</td>
<td>Masters, Exercise Sciences/Physiology and Movement Studies, University of Denver</td>
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<td>Di Pietro, Santiago</td>
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<td>Bachelors, University of Buenos Aires</td>
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<td>Dicesare, Catherine</td>
<td>Associate Professor</td>
<td>Bachelors, Art History, Criticism and Conservation, Florida State University</td>
<td>1990</td>
<td>Masters, Art History, Criticism and Conservation, Syracuse University</td>
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<td>Dickerson, William</td>
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<td>Bachelors, English Language and Literature, General, Ohio University</td>
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<td>2013</td>
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<td>Dickinson, Greg</td>
<td>Professor</td>
<td>Bachelors, Communications, General, Walla Walla College</td>
<td>1987</td>
<td>Masters, Speech and Rhetorical Studies, University of California</td>
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<td>Dickison, Brenda</td>
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<td>Bachelors, Psychology, General, Evergreen State College</td>
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<td>Masters, Social Work, University of Washington</td>
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<td>Bachelors, Journalism, Northern Arizona University</td>
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<td>Professional, Veterinary Medicine (D.V.M.), School of Veterinary Medicine-Hanover, Germany, 2001&lt;br&gt;Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), School of Veterinary Medicine - Hanover, Germany, 2002&lt;br&gt;Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2007</td>
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<td>Bachelors, Lafayette College, 1981&lt;br&gt;Masters, University of Delaware, 1983&lt;br&gt;Doctorate, American Government and Politics, Brandeis University, 1991</td>
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Downing, Jason | Instructor |
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<td>Bachelors, Queen's University, 1998 Professional, University of Saskatchewan, 2003 Masters, University of Saskatchewan, 2005 Doctorate, Colorado State University, 2009</td>
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<td>Duncan, Pamela</td>
<td>Instructor</td>
<td>Bachelors, Political Science, General, University of California, 1980 Masters, American Government and Politics, Colorado State University, 1983 Doctorate, Political Science and Government, Other, Colorado State University, 2003</td>
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<td>Dungy, Camille</td>
<td>Professor</td>
<td>Bachelors, Stanford University Doctorate, University of North Carolina</td>
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<td>Dunn, Thomas</td>
<td>Assistant Professor</td>
<td>Bachelors, University of Richmond, 2002 Masters, Syracuse University, 2005 Doctorate, University of Pittsburgh, 2011</td>
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<td>Duval, Dawn</td>
<td>Associate Professor</td>
<td>Bachelors, Biochemistry, University of Nevada, Reno, 1990 Doctorate, Pharmacology, Human and Animal, University of Nevada, Reno, 1994</td>
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<td>Duvall-Pelham, Alexander</td>
<td>Instructor</td>
<td>Bachelors, College of Charleston, 2002 Professional, VA-MD Regional College of Veterinary Medicine</td>
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<td>Eakman, Aaron</td>
<td>Assistant Professor</td>
<td>Bachelors, University of North Dakota, 1989 Masters, Western Michigan University, 1992 Doctorate, University of Southern California, 2007</td>
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<td>Easley, Jeremiah</td>
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<td>Egenhoff, Sven</td>
<td>Professor</td>
<td>Bachelors, Geology, Technische Universitaet Clausthal, 1991 Masters, Geology, Universitaet Heidelberg, 1996 Doctorate, Geology, Technische Universitaet Berlin, 2000</td>
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<td>Ehrhart, Eugene</td>
<td>Professor</td>
<td>Bachelors, Animal Sciences, General, University of Missouri, 1983 Professional, Veterinary Medicine (D.V.M.), University of Missouri, 1987 Doctorate, Radiation Biology/Radiobiology, Colorado State University, 1996</td>
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<td>Ehrhart, Nicole</td>
<td>Professor</td>
<td>Professional, Veterinary Medicine (D.V.M.), University of Pennsylvania, 1990 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1994</td>
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<td>Elder, John</td>
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<td>Doctorate, University of Virginia, 1995</td>
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<td>Elkins, Mary</td>
<td>Instructor</td>
<td>Bachelors, English Language and Literature, General, Emmanuel College, Boston, 1966; Masters, English Language and Literature, General, Southern Illinois University, 1968; Doctorate, Southern Illinois University, 1979</td>
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<td>Ellingwood, Bruce</td>
<td>Professor</td>
<td>Bachelors, University Illinois at UC, 1968; Masters, University of Illinois at UC, 1969; Doctorate, University of Illinois at UC, 1972</td>
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<td>Elliott, Adriane</td>
<td>Instructor</td>
<td>Bachelors, Sociology, TEXAS CHRISTIAN UNIVERSITY, 1997; Masters, Soil Sciences, COLORADO STATE UNIVERSITY, 2004</td>
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<td>Elliott, Jonathan</td>
<td>Assistant Professor</td>
<td>Bachelors, Construction and Building Finishers and Managers, Other, Pennsylvania College of Technology, 2004; Masters, Construction and Building Finishers and Managers, Other, Colorado State University, 2010; Doctorate, Education, General, Colorado State University, 2013</td>
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<td>Ellis, Jessica</td>
<td>Assistant Professor</td>
<td>Bachelors, California Polytechnic Institute, San Luis Obispo, 2007; Masters, California Polytechnic Institute, San Luis Obispo, 2009; Doctorate, San Diego State University, University of California, San Diego, 2014</td>
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<td>Bachelors, Microbiology/ Bacteriology, U OF WYOMING, 1966; Masters, Veterinary Clinical Sciences (M.S., Ph.D.), PURDUE UNIV, 1969; Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), PURDUE UNIV, 1972</td>
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<td>Bachelors, Mathematics, Moscow State University, 1986; Masters, Mathematics, Moscow State University, 1986; Professional, Mathematics, Moscow State University, 1991</td>
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<td>Engle, Terry</td>
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<td>Bachelors, Animal Sciences, General, Colorado State University, 1993; Masters, Animal Sciences, Other, Colorado State University, 1996; Doctorate, Animal Sciences, Other, North Carolina State University, 1999</td>
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<td>Enns, Kellie</td>
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<td>Bachelors, Animal Sciences, General, Washington State University, 1993; Masters, Agriculture/ Agricultural Sciences, General, Colorado State University, 1996; Doctorate, Education, General, Colorado State University, 2008</td>
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<td>Enns, Richard</td>
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<td>Bachelors, Biology, General, Tabor College, 1987; Masters, Animal Sciences, General, CSU, 1991; Doctorate, Animal Sciences, General, CSU, 1995</td>
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<td>Erb, Rachel</td>
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<td>Fannon, Elizabeth</td>
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<td>Bachelors, Philosophy, Conception Seminary, 1967 Masters, St. Mary's University, San Antonio, TX, 1967 Masters, Theological Studies and Religious Vocations, Other, ST MARY'S U, 1970 Masters, Counseling Psychology, OLOFTLU, 1972 Doctorate, Counselor Education Counseling and Guidance Services, U OF WYOMING, 1979</td>
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<td>Fidler, Deborah</td>
<td>Professor</td>
<td>Bachelors, Psychology, Other, Cornell University, 1996 Masters, Educational Psychology, University of California, Los Angeles, 1998 Doctorate, Educational Psychology, University of California, Los Angeles, 2001</td>
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<td>Field, Stuart</td>
<td>Associate Professor</td>
<td>Bachelors, Physics, General, Stanford University, 1981 Masters, Physics, General, University of Chicago, 1982 Doctorate, Physics, General, University of Chicago, 1986</td>
</tr>
<tr>
<td>Finke, Richard</td>
<td>Professor</td>
<td>Bachelors, Chemistry, General, UNIV COLORADO, 1972 Doctorate, Chemistry, General, STANFORD UNIV, 1976</td>
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<tr>
<td>Firooz, Jonathan</td>
<td>Instructor</td>
<td>Bachelors, Colorado Statue University, 1996</td>
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<tr>
<td>Fischer, Emily</td>
<td>Assistant Professor</td>
<td>Bachelors, Atmospheric Sciences and Meteorology, University of British Columbia, 2002 Masters, Earth and Planetary Sciences, University of New Hampshire, 2005 Doctorate, Atmospheric Sciences and Meteorology, University of Washington, 2010</td>
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<tr>
<td>Fisher, Christopher</td>
<td>Professor</td>
<td>Doctorate, Anthropology, University of</td>
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<td>Fisher, Gwenith</td>
<td>Assistant Professor</td>
<td>Bachelors, Psychology, General, Pennsylvania State University, 1995 Masters, Industrial and Organizational Psychology, Bowling Green State University, 1999 Doctorate, Industrial and Organizational Psychology, Bowling Green State University, 2001</td>
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<td>Fisk, John</td>
<td>Assistant Professor</td>
<td>Bachelors, Pennsylvania State Univ, 1997 Doctorate, Univ of Wisconsin-Madison, 2004</td>
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<td>Fitzpatrick, Cornelius</td>
<td>Instructor</td>
<td>Bachelors, Art History, Criticism and Conservation, University of Texas at Austin, 1995 Bachelors, Fine/Studio Arts, University of Texas at Austin, 1995 Masters, Art History, Criticism and Conservation, Pratt Institute, 2000 Masters, Painting, Pratt Institute, 2000</td>
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<tr>
<td>Flippin, Paul</td>
<td>Associate Professor</td>
<td>Bachelors, Art History, Criticism and Conservation, University of Texas at Austin, 1995 Bachelors, Fine/Studio Arts, University of Texas at Austin, 1995 Masters, Art History, Criticism and Conservation, Pratt Institute, 2000 Masters, Painting, Pratt Institute, 2000</td>
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<tr>
<td>Florant, Gregory</td>
<td>Professor</td>
<td>Bachelors, Biology, General, CORNELL UNIV, 1973 Doctorate, Physiology, Human and Animal, STANFORD UNIV, 1978</td>
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<tr>
<td>Flott, Amanda</td>
<td>Instructor</td>
<td>Masters, Social Work, University of Chicago, 2011 Bachelors, Political Science, General, University of Kansas</td>
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<tr>
<td>Folkestad, James</td>
<td>Professor</td>
<td>Doctorate, Texas AM, 1996</td>
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<tr>
<td>Folsom, Jennifer</td>
<td>Instructor</td>
<td>Bachelors, Colorado Statue University, 1996</td>
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<tr>
<td>Fonte, Steven</td>
<td>Assistant Professor</td>
<td>Bachelors, Colorado Statue University, 1996</td>
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<td>Fosdick, Bailey</td>
<td>Assistant Professor</td>
<td>Bachelors, Mathematical Statistics, Colorado State University, 2008</td>
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<td></td>
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<td>Doctorate, Mathematical Statistics, University of Washington, 2013</td>
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<td>Foster, Michelle</td>
<td>Assistant Professor</td>
<td>Bachelors, Spelman College Doctorate, Georgia State University</td>
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<td>Fothergill, Wendy</td>
<td>Assistant Professor</td>
<td>Bachelors, Communications, General, Colorado State University, 1996</td>
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<td>Masters, Educational/Instructional Media Tech./Technician, University of Northern Colorado, 2001</td>
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<td>Certificate, Educational Supervision, Colorado State University, 2011</td>
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<td>Foy, Brian</td>
<td>Associate Professor</td>
<td>Bachelors, University of Notre Dame, 1994</td>
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<td>Doctorate, Tulane University, 2001</td>
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<tr>
<td>Francis, G</td>
<td>Professor</td>
<td>Bachelors, Business Administration and Management, General, CENTRAL COLL, 1964</td>
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<td></td>
<td></td>
<td>Masters, Human Resources Management, U OF NEBRASKA, 1966</td>
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<td>Doctorate, Management Information Systems and Business Data Processing, U OF NEBRASKA, 1971</td>
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<td>Francois, Ronald</td>
<td>Associate Professor</td>
<td>Bachelors, McGill University, 1988</td>
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<td>Masters, University of Maryland, 1994</td>
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<td>Frank, Chad</td>
<td>Assistant Professor</td>
<td>Bachelors, Microbiology/Bacteriology, Colorado State University, 2003</td>
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<td>Masters, Anatomy, Colorado State University, 2004</td>
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<td>Professional, Veterinary Medicine (D.V.M.), Michigan State University, 2008</td>
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<td>Masters, Pathology, Human and Animal, Purdue University, 2011</td>
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<td>Frank, Kelli</td>
<td>Instructor</td>
<td>Associates, American (United States) History, Highline Community College, 2009</td>
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<td></td>
<td></td>
<td>Bachelors, American (United States) History, University of Washington, 2011</td>
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<td>Bachelors, Sociology, University of Washington, 2011</td>
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<td>Masters, Higher Education Administration, Colorado State University, 2014</td>
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<tr>
<td>Franz, Bill</td>
<td>Assistant Professor</td>
<td>Bachelors, Business Management and Administrative Services, Other, Black Hills State University, 1979</td>
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<td>Masters, Business Management and Administrative Services, Other, University of South Dakota, 1981</td>
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<td>Doctorate, Colorado State University, 2004</td>
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<tr>
<td>Frasier, Mark</td>
<td>Associate Professor</td>
<td>Bachelors, Biological Sciences/Life Sciences, Other, COLO STATE UNIV, 1969</td>
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<td></td>
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<td>Masters, Anatomy, COLO STATE UNIV, 1973</td>
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<tr>
<td>Frasier, W</td>
<td>Professor</td>
<td>Bachelors, Agricultural Economics, U NEBRASKA-LINC, 1983</td>
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<td></td>
<td></td>
<td>Masters, Agricultural Economics, U NEBRASKA-LINC, 1990</td>
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<td>Doctorate, Agricultural Economics, WASH STATE UNIV, 1993</td>
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<td>Name</td>
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| Frazier, Aanston    | Instructor        | Bachelors, Univ. of Northern Colorado, 2009  
|                    |                   | Masters, Colorado State University, 2011                                |
| Frazier, Michael    | Assistant Professor | Bachelors, Design and Applied Arts, Other, Missouri State University, 1993  
|                    |                   | Masters, Design and Applied Arts, Other, Colorado State University, 2007 |
| Frederiksen, Heidi | Assistant Professor |                                                                        |
| Freed, David       | Instructor        |                                                                        |
| Freeman, Hilary     | Instructor        | Bachelors, Mathematics, Colorado State University, 2000  
|                    |                   | Masters, Mathematics, Colorado State University, 2002                    |
| Freeman, Kate       | Assistant Professor | Bachelors, Biology, General, Brown University, 2000  
|                    |                   | Masters, Environmental Health, Duke University, 2003                   
|                    |                   | Professional, Veterinary Medicine (D.V.M.), North Carolina State University, 2008 |
| Fremstad, Anders    | Assistant Professor | Bachelors, Georgetown University, 2006  
|                    |                   | Doctorate, Economics, Other, University of Massachusetts, Amherst, 2015 |
| Frey, Richard      | Assistant Professor | Bachelors, University of Puget Sound, 2002  
|                    |                   | Masters, Indiana University, 2008  
|                    |                   | Doctorate, Michigan State University, 2011                             |
| Frisbie, David      | Professor         | Bachelors, Biochemistry, University of Wisconsin-River Falls, 1987  
|                    |                   | Professional, Veterinary Medicine (D.V.M.), University of Wisconsin-Madison, 1992  
|                    |                   | Masters, Medical Pathology, Colorado State University, 1996  
|                    |                   | Doctorate, Molecular Biology, Colorado State University, 1999              |
| Funk, Loren        | Assistant Professor | Bachelors, Colorado State University, 1979  
|                    |                   | Masters, Construction and Building Finishers and Managers, Other, Colorado State University, 2009 |
| Funk, William      | Associate Professor | Bachelors, Biology, General, Wesleyan University, 1994  
|                    |                   | Doctorate, Ecology, University of Montana, 2004                          |
| Fyffe, Lisa         | Assistant Professor | Bachelors, Occupational Therapy, Colorado State University, 2006          |
| Gabriel, Jacqulyn  | Instructor        | Bachelors, University of Iowa, 1997  
|                    |                   | Masters, Univ of Nebraska at Omaha, 2004                               |
| Gadomski, Benjamin  | Instructor        | Bachelors, Trine University, 2009  
|                    |                   | Doctorate, Colorado State University, 2015                             |
| Gaines, Todd       | Assistant Professor | Bachelors, Soil Sciences, Colorado State University, 2004  
|                    |                   | Masters, Colorado State University, 2006  
|                    |                   | Doctorate, Colorado State University, 2009                             |
| Gallagher, Timothy  | Professor         | Bachelors, Finance, General, U OF ILLINOIS, 1974  
|                    |                   | Masters, Finance, General, U OF ILLINOIS, 1976  
|                    |                   | Doctorate, Finance, General, U OF ILLINOIS, 1978                       |
| Galpin, Timothy     | Instructor        | Bachelors, State University of New York, 1983  
|                    |                   | Masters, Southern Illinois University, 1985  
|                    |                   | Doctorate, University of California, 1989                              |
| Galvin, Kathleen    | Professor         | Bachelors, Anthropology, COLO STATE UNIV, 1971  
|                    |                   | Masters, Anthropology, COLO STATE UNIV, 1979  
<p>|                    |                   | Doctorate, Anthropology, SUNY BINGHAMTON, 1985                         |</p>
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<tr>
<th>Name</th>
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| Gamble, Harold| Instructor     | Bachelors, Philosophy, University of Montana, 1966  
|               |                | Masters, Philosophy, Washington University, 1969  
|               |                | Doctorate, Washington University in St. Louis, 1974                                              |
| Ganster, Daniel| Professor     | Bachelors, Wabash College, 1973  
|               |                | Masters, Purdue, 1976  
|               |                | Doctorate, Purdue Krannert Graduate School of Management, 1978                                    |
| Gao, Wei       | Professor      | Bachelors, Anhui Normal University, 1988  
|               |                | Bachelors, Atmospheric Sciences and Meteorology, Nanjing Institute of Meteorology, 1988        
|               |                | Masters, Mississippi State University, 1992  
|               |                | Doctorate, Purdue University, 1997                                                               |
| Gao, Xinfeng   | Assistant Professor | Bachelors, Nanjing University of Aero Astro, 1995  
|               |                | Masters, Syracuse University, 2001  
|               |                | Doctorate, University of Toronto, 2008                                                           |
| Garcia, Antero | Assistant Professor | Bachelors, University of California  
|               |                | Doctorate, University of California  
|               |                | Masters, University of California                                                                |
| Garofalo, Noriko| Instructor    | Bachelors, Biology, General, Colorado State University, 1989  
|               |                | Doctorate, Molecular Biology, Cornell University, 1998                                           |
| Garrity, Deborah| Professor     | Bachelors, Biology, General, Colorado State University, 1989  
|               |                | Doctorate, Molecular Biology, Cornell University, 1998                                           |
| Garry, Franklyn | Professor     | Bachelors, Biology, General, CORNELL UNIV, 1977  
|               |                | Professional, Veterinary Medicine (D.V.M.), CORNELL UNIV, 1981  
|               |                | Masters, Veterinary Clinical Sciences (M.S., Ph.D.), OHIO STATE UNIV, 1987                         |
| Gates, Timothy | Professor      | Bachelors, Agricultural Engin., Louisiana State University AM College, 1978  
|               |                | Masters, Civil Engin., General, Colorado State University, 1980  
|               |                | Doctorate, Civil Engin., General, University of California, Berkeley, 1988                       |
| Gavin, Michael | Associate Professor | Bachelors, Biology, General, Bowdoin College, 1995  
|               |                | Doctorate, Ecology, University of Connecticut, 2002                                               |
| Gavin, William | Associate Professor | Bachelors, Moorhead State University, 1973  
|               |                | Masters, University of Miami, 1977  
|               |                | Doctorate, Experimental Psychology, University of Miami, 1979                                     |
| Gebhardt, Karen| Assistant Professor | Bachelors, Colorado State University, 2000  
|               |                | Masters, Colorado State University, 2003  
|               |                | Doctorate, Colorado State University, 2011                                                         |
| Geiss, Brian   | Associate Professor | Bachelors, Univ of Kansas, 1997  
|               |                | Doctorate, St. Louis University School of Medicine, 2002                                           |
| Gelfand, Martin| Associate Professor | Bachelors, Physics, General, UNIV PENN, 1984  
|               |                | Doctorate, Physics, General, CORNELL UNIV, 1990                                                   |
| Genik, Paula   | Assistant Professor | Doctorate, Physiology, Human and Animal, Sherbrooke University, 1991                             |
| Gensmer, Kristin| Instructor    | Masters, Anthropology, Colorado State University, 2012                                         |
Gentile, Christopher  Assistant Professor  Bachelors, Exercise Sciences/Physiology and Movement Studies, Skidmore College, 1999 Masters, Foods and Nutrition Science, University of Colorado at Boulder, 2003 Doctorate, Dietetics/ Human Nutritional Services, Virginia Polytechnic Institute State University, 2006

Gentry-Weeks, Claudia  Associate Professor  Doctorate, Univ Of Oklahoma, 1985


Ghosh, Sudipto  Associate Professor  Doctorate, Purdue University, 2000

Gibbons, Alyssa  Instructor  Bachelors, Psychology, General, University of Evansville, 2000 Masters, Industrial and Organizational Psychology, University of Illinois, Champaign, 2003 Doctorate, Industrial and Organizational Psychology, University of Illinois, Champaign, 2007

Giberson, Paul  Instructor  Bachelors, Colorado State University, 2001 Masters, Higher Education Administration, Colorado State, 2005

Gibson, Katie  Associate Professor  Bachelors, Loyola Marymount University, Los Angeles, 1998 Masters, California State University, Northridge, 2000 Doctorate, Pennsylvania State University, 2004

Gilbert, Carter  Instructor  Bachelors, Criminal Justice Studies, Texas Christian University, 2010 Bachelors, Drama/Theater Arts, General, Texas Christian University, 2010 Masters, Higher Education Administration, Colorado State University, 2014

Gile, Traci  Instructor  Bachelors, English Language and Literature, General, Colorado State University, 1995 Masters, Education, General, University of Northern Colorado, 2001

Gilhooly, Barbara  Instructor

Gilkey, David  Associate Professor  Masters, Environmental Health, University of Denver, 1995 Doctorate, Environmental Health, Colorado State University, 2002

Gilliland, David  Professor  Bachelors, University of Tennessee, 1981 Masters, Georgia State University, 1986 Doctorate, Georgia State University, 1997

Gilman, Neyda  Assistant Professor  Bachelors, Basic Medical Sciences, Other, University of Utah, 2006 Masters, Library Science/Librarianship, University at Buffalo, 2013

Gingerich, Karla  Assistant Professor  Bachelors, Psychology, General, University of Southern Colorado, 1991 Masters, Counseling Psychology, Colorado State University, 1995 Doctorate, Counseling Psychology, Colorado State University, 1998
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<th>Name</th>
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| Gingras, Sharmini | Instructor       | Bachelors, Law and Legal Studies, Other, University of London, United Kingdom, 1997  
|                 |                  | Masters, Law and Legal Studies, Other, Malaya University, Malaysia, 2002    |
| Giantz, Michelle | Professor        | Bachelors, Anthropology, University of Pennsylvania, 1990  
|                 |                  | Doctorate, Anthropology, University of Pennsylvania, 1999                  |
| Glick, Scott     | Associate Professor | Bachelors, Accounting, University of Northern Colorado, 1982  
|                 |                  | Masters, Public Administration, University of Wyoming, 1991  
|                 |                  | Masters, Construction and Building Finishers and Managers, Other, Colorado State University, 2004  
|                 |                  | Doctorate, Education, General, Colorado State University, 2007            |
| Gloeckner, Gene  | Professor        | Bachelors, Tech. Teacher Education/Industrial Arts Teacher Education, OHIO STATE UNIV, 1974  
|                 |                  | Masters, Industrial Design, COLO STATE UNIV, 1977  
|                 |                  | Doctorate, Tech. Teacher Education/Industrial Arts Teacher Education, OHIO STATE UNIV, 1983  |
| Glycenfer, Frances | Instructor    | Masters, University of Colorado, Boulder, 1982  
|                 |                  | Bachelors, University of Colorado Boulder  |
| Goar, Allison    | Instructor       | Bachelors, Western Washington University, 2011                            |
| Goble, Daniel    | Professor        | Bachelors, The University of Northern Colorado, 1983  
|                 |                  | Masters, The University of Texas at Austin, 1986  
|                 |                  | Doctorate, The University of Texas at Austin, 1993                        |
| Goemans, Christopher | Associate Professor | Bachelors, Economics, General, University of Maine, 1997  
|                 |                  | Masters, Economics, General, University of Colorado, 2000  
|                 |                  | Doctorate, Economics, General, University of Colorado, 2006              |
| Goetz, Bradley   | Professor        | Bachelors, Landscape Architecture, COLO STATE UNIV, 1990  
|                 |                  | Masters, Landscape Architecture, HARVARD UNIV, 1992                       |
| Goh, Siao Sia    | Instructor       | Bachelors, University of Sydney, Australia, 1997  
|                 |                  | Bachelors, University of Sydney, Australia, 2002  
|                 |                  | Certificate, ACVS, 2011  
|                 |                  | Certificate, Surgical Oncology, 2011                                       |
| Goldstein, Liba  | Associate Professor | Bachelors, Biology, General, Middlebury College, 1997  
|                 |                  | Doctorate, Environmental Science/Studies, University of California Santa Cruz, 2004 |
| Golicic, Susan   | Associate Professor | Bachelors, Wayne State University, 1989  
|                 |                  | Masters, University of Tennessee, 1997  
|                 |                  | Doctorate, University of Tennessee, 2003                                  |
| Gollapudi, Aparna | Associate Professor | Bachelors, Delhi University, 1988  
|                 |                  | Masters, Delhi University, 1991  
|                 |                  | Masters, Delhi University, 1993  
|                 |                  | Doctorate, University of Connecticut, 2006                               |
| Gonzalez, Jessica | Assistant Professor | Bachelors, Psychology, General, Florida International University, 2009  
|                 |                  | Masters, Liberal Arts and Sciences/Liberal Studies, Nova Southeastern University, 2011  
<p>|                 |                  | Doctorate, Counselor Education Counseling and Guidance Services, University of Central Florida, 2015 |</p>
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<th>Name</th>
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| Gonzalez-Juarrero, Mercedes | Associate Professor | Bachelors, Univ Complutense de Madrid, 1982  
 Masters, Univ Complutense de Madrid, 1982  
 Doctorate, Univ Autonoma de Madrid, 1990 |
| Goodrich, Laurie        | Associate Professor  | Bachelors, Pathology, Human and Animal, University of Connecticut, 1987  
 Doctorate, Veterinary Medicine (D.V.M.), University of Illinois, 1991  
 Masters, Pharmacology, Human and Animal, Virginia Tech University, 1996  
 Professional, Cell and Molecular Biology, Other, Cornell University, 2004 |
| Gorin, Moti             | Assistant Professor  | Doctorate, Philosophy, Rice University, 2013  
 Masters, University of Pennsylvania, 2015 |
| Graff, Gregory          | Associate Professor  | Bachelors, Cornell University, 1992  
 Masters, Ohio State University, 1995  
 Masters, University of CA, Berkley, 1999  
 Doctorate, University of California, Berkley, 2002 |
| Graham, Daniel          | Assistant Professor  | Bachelors, Psychology, General, Providence College, 2003  
 Masters, Social Psychology, University of California Irvine, 2006  
 Doctorate, Psychology, General, University of California Irvine, 2009 |
| Graham, James           | Professor            | Bachelors, Biology, General, U OF MINNESOTA, 1979  
 Doctorate, Pathology, Human and Animal, CORNELL UNIV, 1985 |
| Graham, Rachel          | Assistant Professor  | Bachelors, Beloit College, 2003  
 Masters, University of California, Irvine, 2005  
 Doctorate, University of California, Irvine, 2009 |
| Grainger, David         | Instructor           |                                            |
| Gramling, Audrey        | Professor            | Bachelors, University of Toledo, 1985  
 Masters, Georgia State University, 1990  
 Doctorate, University of Arizona, 1995 |
| Grandin, Temple         | Professor            | Bachelors, Psychology, General, Franklin Pierce College, 1970  
 Masters, Animal Sciences, General, Arizona State University, 1975  
 Doctorate, Animal Sciences, General, University of Illinois, 1989 |
| Grapes, Karyn           | Assistant Professor  | Bachelors, Western, 1988  
 Masters, Colorado State University, 2008  
 Doctorate, University of Colorado Boulder, 2012 |
| Gravdahl, John          | Professor            | Bachelors, Graphic Design, Commercial Art and Illustration, COLO STATE UNIV, 1980  
 Masters, Graphic Design, Commercial Art and Illustration, SYRACUSE UNIV, 1991 |
| Graves, Leila           | Assistant Professor  |                                            |
| Gray, Terry             | Instructor           | Doctorate, Molecular Biology, University of Oregon, 1985 |
| Greeb, Madeline         | Instructor           | Masters, Michigan State University, 1965 |
| Greene, David           | Associate Professor  | Doctorate, Education, Other, Colorado State University, 1996 |
| Greenough, Forest       | Associate Professor  | Doctorate, University of Northern Colorado, 2005 |
| Griffenhagen, Gregg     | Instructor           |                                            |
| Griffin, Lynn           | Assistant Professor  | Professional, Veterinary Medicine (D.V.M.), University of Guelph, Ontario Canada, 1997  
 Masters, Colorado State University, 2013 |
| Grigg, Neil             | Professor            | Bachelors, Military Technol., Unites States Military Academy, 1961  
 Masters, Water Resources Engin., Auburn University, 1965  
 Doctorate, Water Resources Engin., Colorado State University, 1969 |
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<td>Grim, Frederique</td>
<td>Associate Professor</td>
<td>Doctorate, French Language Teacher Education, University of Illinois at Urbana-Champaign, 2005</td>
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<td>Grindle, Sharon</td>
<td>Instructor</td>
<td>Bachelors, Humbold State University Masters, Colorado State University</td>
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<td>Gross, Michael</td>
<td>Associate Professor</td>
<td>Bachelors, Arizona State University, 1988 Masters, University of Southern California, 1990 Doctorate, Arizona State University, 1998</td>
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<td>Grosse, Larry</td>
<td>Instructor</td>
<td>Doctorate, Texas AM University, 1987</td>
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<td>Gruby, Rebecca</td>
<td>Assistant Professor</td>
<td>Bachelors, Natural Resources Conservation, General, University of Florida, 2006 Doctorate, Environmental Science/Studies, Duke University, 2013</td>
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<tr>
<td>Gudmestad, Robert</td>
<td>Associate Professor</td>
<td>Bachelors, History, General, North Dakota State, 1987 Masters, History, General, University of Richmond, 1993 Doctorate, American (United States) History, Louisiana State Univ., 1999</td>
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<td>Guggemos, Angela</td>
<td>Associate Professor</td>
<td>Bachelors, University of California, Berkley, 1994 Masters, University of California, Berkley, 1995 Doctorate, University of California, Berkley, 2003</td>
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<tr>
<td>Gupta, Kalpana</td>
<td>Assistant Professor</td>
<td>Bachelors, Business Administration and Management, General, Philadelphia University, 1990 Masters, Liberal Arts and Sciences/Liberal Studies, Regis University, 2002 Doctorate, Adult and Continuing Teacher Education, University of Wyoming, 2012</td>
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<td>Gurvich, Zhanna</td>
<td>Instructor</td>
<td>Bachelors, Clark University, 1989 Masters, Southern Methodist University, 1994</td>
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<td>Gustafson, Daniel</td>
<td>Professor</td>
<td>Bachelors, Biology, General, Santa Clara University, 1987 Doctorate, Pharmacology, Human and Animal, University of Nevada, 1992</td>
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<td>Guth, Amanda</td>
<td>Assistant Professor</td>
<td>Doctorate, Biological Immunology, University of Colorado, 2003 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2007</td>
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<td>Guzik, Stephen</td>
<td>Assistant Professor</td>
<td>Bachelors, Royal Military College of Canada, 1998 Masters, Laval University, 2003 Doctorate, University of Toronto, 2010</td>
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<td>Hackett, Eileen</td>
<td>Associate Professor</td>
<td>Professional, Veterinary Medicine (D.V.M.), University of Illinois, 1998</td>
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<tr>
<td>Hackett, Timothy</td>
<td>Professor</td>
<td>Bachelors, Zoology, General, University of Nevada, 1984 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1989 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1994</td>
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<td>Haddock, Shelley</td>
<td>Associate Professor</td>
<td>Bachelors, University of Utah, 1990 Masters, Colorado State University, 1995 Doctorate, Colorado State University, 2001</td>
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<tr>
<td>Hadrich, Joleen</td>
<td>Associate Professor</td>
<td>Bachelors, University of Minnesota, Morris, 2004 Masters, Agricultural Economics, Michigan State University, 2007 Doctorate, Agricultural Economics, Michigan State University, 2009</td>
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<tr>
<td>Name</td>
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<td>Haley, Scott</td>
<td>Professor</td>
<td>Bachelors, Washington State University, 1983 Masters, Colorado State University, 1989 Doctorate, Colorado State University, 1992</td>
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<tr>
<td>Hall, Peter</td>
<td>Instructor</td>
<td>Doctorate, University of Minnesota, 1963</td>
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<td>Hallahan, Kirk</td>
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<td>Hamid, Idris</td>
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<td>Bachelors, Physics, Other, Georgia State University, 1990 Masters, Physics, Other, University of Buffalo, New York, 1996 Doctorate, Philosophy, University of Buffalo, New York, 1998</td>
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<td>Hamilton, Karyn</td>
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<td>Bachelors, Nutritional Sciences, Montana Statue University Bozeman, 1989 Masters, Exercise Sciences/Physiology and Movement Studies, Montana State University Bozeman, 1996 Doctorate, Exercise Sciences/Physiology and Movement Studies, University of Florida, 2000</td>
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<td>Han, Hyungchul</td>
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| Hasbrouck, Beth | Assistant Professor | Bachelors, English Language and Literature, General, Colorado State University, 2000  
Masters, Teaching English as a Second Language/Foreign Language, School for International Training, 2005 |
| Hassel, Diana | Associate Professor | Bachelors, Animal Sciences, General, University of California, Davis, 1989  
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Doctorate, Anthropology, Colorado State University, 2004 |
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Doctorate, Duke University, 2003 |
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| Henke, Nancy | Instructor | Bachelors, Boise State University  
Masters, Colorado State University |
| Henle, Christine | Associate Professor | Doctorate, Colorado State University, 2001 |
| Henry, Charles | Professor | Bachelors, Missouri Southern State College, 1994  
Doctorate, Analytical Chemistry, University of Arkansas, 1998 |
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<td>Instructor</td>
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<td>Masters, Law (LL.B., J.D.), University of Denver, 1982</td>
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<td>Hirchi, Mohammed</td>
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<td>Associates, Sociology, University at Rennes, France, 1987 Bachelors, French Language and Literature, Indiana University, 1991 Masters, French Language and Literature, Indiana University, 1993 Doctorate, French Language and Literature, Indiana University, 2000 Masters, Business Administration and Management, General, Colorado State University, 2002</td>
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<td>Ho, Pui</td>
<td>Professor</td>
<td>Bachelors, Chemistry, General, Franklin Marshall College, 1979 Doctorate, Biochemistry, Northwestern University, 1984</td>
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<td>Hoag, Dana</td>
<td>Professor</td>
<td>Bachelors, Farm and Ranch Management, COLO STATE UNIV, 1980 Masters, Agricultural Economics, COLO STATE UNIV, 1981 Doctorate, Agricultural Economics, WASHINGTON STAT, 1984</td>
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<td>Hobbs, Elizabeth</td>
<td>Associate Professor</td>
<td>Bachelors, Economics, Other, AMERICAN UNIV, 1977 Masters, Landscape Architecture, U OF ILLINOIS, 1984</td>
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<td>Hoffman, Chad</td>
<td>Assistant Professor</td>
<td>Bachelors, Forestry Sciences, Northern Arizona University, 2003 Masters, Forestry Sciences, Northern Arizona University, 2005 Doctorate, University of Idaho, 2011</td>
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<td>Hogan, Michael</td>
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<td>Hogler, Raymond</td>
<td>Professor</td>
<td>Bachelors, English Language and Literature, General, FT LEWIS COLL, 1967 Doctorate, English Language and Literature, General, UNIV OF COLO, 1972 Doctorate, Law (L.L.B., J.D.), UNIV OF COLO, 1976</td>
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<td>Professor</td>
<td>Bachelors, Botany, General, E ILLINOIS UNIV, 1969</td>
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<td>Doctorate, Genetics, Plant and Animal, PURDUE UNIV, 1974</td>
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<td>Hughes, Shannon</td>
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<td>Humphrey, Michael</td>
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<td>Bachelors, Exercise Sciences/Physiology and Movement Studies, University of Manitoba, 1985</td>
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<td>Bachelors, Biology, General, Wake Forest University, 1995 &lt;br&gt; Masters, Biology, General, Wake Forest University, 1999 &lt;br&gt; Doctorate, Biology, General, University of Missouri, 2004</td>
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<td>Bachelors, Point Loma Nazarene College, 1989 &lt;br&gt; Certificate, Point Loma Nazarene College, 1989 &lt;br&gt; Doctorate, Microbiology/Bacteriology, University of Arizona, 1996</td>
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<td>Bachelors, Spanish Language and Literature, William Smith College, 1985 &lt;br&gt; Masters, Fashion Merchandising, Oregon State University, 1989 &lt;br&gt; Doctorate, Clothing/Apparel and Textile Studies, University of Maryland, 1998</td>
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<td>Bachelors, Child Growth, Care and Development Studies, Colorado State University, 2013</td>
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<td>Bachelors, History, General, Cornell University, 2003 &lt;br&gt; Masters, Univ of London, 2007 &lt;br&gt; Doctorate, City/Urban, Community and Regional Planning, Cornell University, 2014</td>
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<td>Masters, Medical Biochemistry, ENSA - Rennes - France, 1994 &lt;br&gt; Doctorate, Biochemistry, ENSA - Rennes - France, 1998</td>
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<td>Bachelors, University of Texas, 2004 &lt;br&gt; Masters, Eastman School of Music, 2006</td>
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<td>Bachelors, Political Science, General, University of Michigan, 1986 &lt;br&gt; Doctorate, Political Science, General, University of Colorado, 1996</td>
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<td>Doctorate, Univ of Wisconsin-Madison, 2009</td>
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<td>Chemistry, General, Andhra University</td>
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<td>Electrical, Electronics and Communication Engin., U ON SRILANKA</td>
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<td>Psychology, General, Bates College</td>
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<td>Johnson, Laurence</td>
<td>Associate Professor</td>
<td>Bachelors, Management Information Systems and Business Data Processing, N ARIZONA UNIV, 1974&lt;br&gt;Masters, Business, General, N ARIZONA UNIV, 1978&lt;br&gt;Doctorate, Accounting, TEXAS TECH UNIV, 1991</td>
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<td>Johnson, Robert</td>
<td>Instructor</td>
<td>Bachelors, IIT, 1980&lt;br&gt;Masters, J of I Chicago, 2008</td>
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<td>Johnson, Sarah</td>
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<td>Bachelors, St. Olaf College, 1978&lt;br&gt;Bachelors, University of Minnesota, 1983&lt;br&gt;Masters, Colorado State University, 1989</td>
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<td>Johnson, Sarah</td>
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<td>Bachelors, University of Vermont&lt;br&gt;Doctorate, Florida State University&lt;br&gt;Masters, Florida State University</td>
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<td>Johnson, Thomas</td>
<td>Associate Professor</td>
<td>Bachelors, Industrial/ Manufacturing Tech./ Technician, Southern Illinois University, 1989&lt;br&gt;Masters, Business Administration and Management, General, University of Illinois, Chicago, 1991&lt;br&gt;Masters, Environmental/ Environmental Health Engin., Northwestern University, 1993&lt;br&gt;Doctorate, Health Physics/Radiologic Health, Purdue University, 1998</td>
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<td>Johnson, Zachary</td>
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<td>Bachelors, Landscaping Operations and Management, Colorado State University, 1993&lt;br&gt;Masters, Landscape Architecture, University of Colorado at Denver, 2003</td>
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<td>Johnston, Matthew</td>
<td>Associate Professor</td>
<td>Bachelors, Biology, General, John Carroll University, 1995&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), University of Pennsylvania, 1999</td>
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<td>Associate Professor</td>
<td>Bachelors, Mesa State College, 2002&lt;br&gt;Masters, University of Florida, 2005</td>
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<td>Jones, Brian</td>
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<td>Bachelors, Physics, General, CASE WESTERN, 1982&lt;br&gt;Masters, Physics, General, CORNELL UNIV, 1985</td>
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<td>Jones, Elizabeth</td>
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<td>Doctorate, European History, University of Minnesota, 2000</td>
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<td>Jones, Kelly</td>
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<td>Bachelors, Biology, General, Meredith College, 2000&lt;br&gt;Masters, Natural Resources Management and Policy, North Carolina State University, 2005&lt;br&gt;Doctorate, Forestry and Related Sciences, Other, University of Wisconsin, 2011</td>
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<td>Jones, Laura</td>
<td>Professor</td>
<td>Bachelors, Northwestern University, 1971&lt;br&gt;Masters, University of Illinois, 1972&lt;br&gt;Doctorate, University of Denver, 1989</td>
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<td>Jones, Walton</td>
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<td>Bachelors, USF, 1970&lt;br&gt;Masters, USF, 1972&lt;br&gt;Masters, Yale University of Drama, 1975</td>
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<td>Jordan, Jaime</td>
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<td>Masters, Latin American Studies, University of Texas at Dallas, 2008&lt;br&gt;Doctorate, History, Other, University of Nebraska-Lincoln, 2012&lt;br&gt;Doctorate, University of Nebraska-Lincoln, 2013</td>
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<td>Bachelors, Anthropology, Colorado State University, 1973</td>
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<td>Bachelors, Hospitality and Recreation Marketing Operations, General, University of Wyoming, 1999</td>
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<td>Doctorate, Neuroscience, University of California at San Francisco, 1988</td>
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<td>Keller, Robert</td>
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<td>Bachelors, Range Science and Management, COLO STATE UNIV, 1980</td>
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| Kent, Suzanne     | Instructor     | Bachelors, Anthropology, University of Colorado, Boulder, 1994  
Masters, Anthropology, Michigan State University, 2005  
Doctorate, Anthropology, Michigan State University, 2008 |
| Ketelsen, Kirk    | Instructor     | Bachelors, Exercise Sciences/Physiology and Movement Studies, Colorado State University, 1992  
Certificate, Computer and Information Sciences, Other, Front Range Community College, 1999  
Bachelors, Psychology, General, Colorado State University, 2003  
Masters, Psychology, General, University of Northern Colorado, 2005  
Masters, Mathematical Statistics, University of Northern Colorado, 2006 |
| Keyt, Clara       | Instructor     | Bachelors, University of West Florida  
Doctorate, mental, Native American, Social Masters, University of West Florida |
| Khattab, Mostafa  | Professor      | Bachelors, Mechanical Engin., University of Helwan, 1976  
Masters, University of Helwan, 1981  
Doctorate, Engin./Industrial Management, University of Nebrask-Lincoln, 1989 |
| Khosla, Rajiv     | Professor      | Bachelors, Agriculture/Agricultural Sciences, General, University of Allahabad, 1992  
Masters, Virginia Tech, 1995  
Doctorate, Soil Sciences, Virginia Tech, 1998 |
| Khrebtan-Hoerhager, Julia | Assistant Professor | Masters, Univ of Zhytomyr, Ukraine, 2001  
Masters, University of Stuttgar, Germany, 2006  
Doctorate, University of Denver, 2011 |
| Kim, James        | Associate Professor | Bachelors, Music Teacher Education, University of Southern California, 1994  
Masters, Music - Voice and Choral/Opera Performance, University of Southern California, 1996  
Doctorate, Music - Voice and Choral/Opera Performance, University of Cincinnati, 2003 |
| Kim, Jangyul      | Associate Professor | Bachelors, English Literature (British and Commonwealth), Sogang University, 1986  
Masters, Public Relations and Organizational Communications, Sogang University, 1995  
Doctorate, Mass Communications, University of Florida, 2005 |
| Kim, Joon         | Professor      | Bachelors, Sociology, New School for Social Research, 1992  
Masters, Sociology, Univ. California, Berkeley, 1994  
Doctorate, Sociology, Univ. California, Berkeley, 1999 |
| Kim, Kyeoung Hee  | Instructor     | Bachelors, Special Education, General, University of Northern Colorado, 1983  
Masters, Elementary Teacher Education, University of Northern Colorado, 1990 |
| Kimbell, Teri     | Instructor     | Bachelors, Exercise Sciences/Physiology and Movement Studies, Colorado State University, 1992  
Certificate, Computer and Information Sciences, Other, Front Range Community College, 1999  
Bachelors, Psychology, General, Colorado State University, 2003  
Masters, Psychology, General, University of Northern Colorado, 2005  
Masters, Mathematical Statistics, University of Northern Colorado, 2006 |

Colorado State University
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<tr>
<th>Name</th>
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| King, Melissa | Assistant Professor | Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1997  
|               |                  | Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2011 |
| Kipper, Matthew | Associate Professor | Bachelors, Iowa State University, 2000  
|               |                  | Doctorate, Iowa State University, 2004 |
| Kirby, Michael | Professor | Bachelors, Mathematics, MA INST OF TECH, 1984  
|               |                  | Masters, Mathematics, BROWN UNIV, 1986  
|               |                  | Doctorate, Mathematics, BROWN UNIV, 1988 |
| Kirby, Rachel | Assistant Professor | Bachelors, Oberlin College, 1987  
|               |                  | Masters, Washington University, 1990  
|               |                  | Doctorate, Washington University, 1995 |
| Kirch, Brett  | Assistant Professor | Bachelors, Animal Sciences, General, Univ of Nebraska, 1984  
|               |                  | Masters, Agricultural Animal Nutrition, Kansas State Univ, 1989  
|               |                  | Doctorate, Agronomy and Crop Science, University of Nebraska-Lincoln, 1995  
|               |                  | Professional, Veterinary Medicine (D.V.M.), Iowa State University, 2003 |
| Kirkpatrick, Allan | Professor | Bachelors, Mechanical Engin., MASS INST TECH, 1972  
|               |                  | Masters, Physics, General, COLL WILL/ MARY, 1974  
|               |                  | Doctorate, Mechanical Engin., MASS INST TECH, 1981 |
| Kissel, John  | Instructor | Bachelors, Art History, Criticism and Conservation, Colorado State University, 1997  
|               |                  | Masters, Clothing/Apparel and Textile Studies, Colorado State University, 2000  
|               |                  | Masters, Fiber, Textile and Weaving Arts, Colorado State University, 2008 |
| Kitchens, John | Instructor | Masters, Louisiana State University, 1999  
|               |                  | Doctorate, University of North Carolina, Chapel Hill, 2007  
|               |                  | Masters, Northern Arizona University, 2013 |
| Klein, Julia  | Associate Professor | Bachelors, Political Science, General, Cornell University, 1990  
|               |                  | Masters, University of California Berkeley, 1995  
|               |                  | Doctorate, University of California Berkeley, 2003 |
| Klett, James  | Professor | Bachelors, Ornamental Horticulture Operations and Management, OHIO STATE UNIV, 1969  
|               |                  | Masters, Horticulture Services Operations and Management, General, U OF ILLINOIS, 1971  
|               |                  | Doctorate, Horticulture Services Operations and Management, General, U OF ILLINOIS, 1974 |
| Kling, Robert | Associate Professor | Certificate, Economics, General, DAVIDSON COLL, 1979  
|               |                  | Masters, Economics, General, UNIV OF KANSAS, 1982  
<p>|               |                  | Doctorate, Economics, General, UNIV OF KANSAS, 1985 |</p>
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<td>Knapp, Alan</td>
<td>Professor</td>
<td>Bachelors, Biology, General, Idaho State University, 1978</td>
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<td>Masters, Botany, General, University of Wyoming, 1981</td>
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<td>Knight, Andrew</td>
<td>Assistant Professor</td>
<td>Bachelors, University of Wisconsin - La Crosse, 2002</td>
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<td>Knight, David</td>
<td>Instructor</td>
<td>Bachelors, University of Wisconsin, 2005</td>
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<td>Knight, Richard</td>
<td>Professor</td>
<td>Bachelors, Forestry and Related Sciences, General, Virginia Tech University, 1974</td>
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<td>Masters, Forestry and Related Sciences, University of Virginia, 1977</td>
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<td>Doctorate, Forestry and Related Sciences, General, Virginia Tech University, 1988</td>
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<td>Knobloch, Katherine</td>
<td>Assistant Professor</td>
<td>Bachelors, Manship School of Mass Communication, Louisiana State University, 2005</td>
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<td>Masters, Manship School of Mass Communication, Louisiana State University, 2008</td>
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<td>Kokoska, Mary-Ann</td>
<td>Professor</td>
<td>Bachelors, Fine/Studio Arts, Queen's University, 1982</td>
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<td>Masters, Concordia University, 1991</td>
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<td>Kokoszka, Piotr</td>
<td>Professor</td>
<td>Masters, Applied Mathematics, General, Wroclaw Politechnic, 1988</td>
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<td>Doctorate, Applied Mathematics, General, Wroclaw Politechnic, 1990</td>
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<td>Doctorate, Mathematics, Boston University, 1993</td>
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<td>Kondratieff, Boris</td>
<td>Professor</td>
<td>Bachelors, Wildlife and Wildlands Management, General, Pennsylvania State University, 1978</td>
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<td>Masters, Entomology, Virginia Polytechnic Institute, 1979</td>
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<td>Doctorate, Marine/Aquatic Biology, Virginia Polytechnic Institute, 1982</td>
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<td>Koontz, Stephen</td>
<td>Professor</td>
<td>Bachelors, Agricultural Economics, General, Virginia Polytechnic Institute, 1985</td>
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<td>Masters, Agricultural Economics, Virginia Polytechnic Institute, 1983</td>
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<td>Doctorate, University of Illinois at Champaign Urbana, 1991</td>
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<td>Korbics, Franco</td>
<td>Instructor</td>
<td>Bachelors, Education Administration and Supervision, General, St. Cloud State University, 1977</td>
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<td>Korte, Russell</td>
<td>Associate Professor</td>
<td>Bachelors, Education Administration and Supervision, General, St. Cloud State University, 1977</td>
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<td>Masters, Business Administration and Management, General, University of St. Thomas, 1990</td>
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<td>Knudsen, Jessica</td>
<td>Instructor</td>
<td>Bachelors, Indiana University, 2010</td>
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<td>Kodrich, Kris</td>
<td>Associate Professor</td>
<td>Doctorate, Indiana University, 2000</td>
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<td>Kogan, Lori</td>
<td>Professor</td>
<td>Bachelors, Psychology, General, Avila College, 1991</td>
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<td>Masters, Experimental Psychology, Colorado State University, 1997</td>
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<td>Doctorate, Counseling Psychology, Colorado State University, 2002</td>
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<td>Koski, Anthony</td>
<td>Professor</td>
<td>Bachelors, Biology, General, KNOX COLLEGE, 1979&lt;br&gt;Masters, Agronomy and Crop Science, OHIO STATE UNIV, 1983&lt;br&gt;Doctorate, Agronomy and Crop Science, OHIO STATE UNIV, 1986</td>
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<td>Kota, Arun</td>
<td>Assistant Professor</td>
<td>Bachelors, Andhra University, 2001&lt;br&gt;Masters, Clarkson University, 2003&lt;br&gt;Doctorate, University of Maryland, 2008</td>
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<td>Krafchick, Jennifer</td>
<td>Assistant Professor</td>
<td>Bachelors, Drexel University, 1992&lt;br&gt;Masters, CSU, 2003&lt;br&gt;Certificate, Colorado State University, 2004&lt;br&gt;Doctorate, Individual and Family Development Studies, Other, Colorado State University, 2007</td>
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<td>Kraiger, Kurt</td>
<td>Professor</td>
<td>Bachelors, Psychology, General, University of Cincinnati, 1979&lt;br&gt;Masters, Industrial and Organizational Psychology, The Ohio State University, 1982&lt;br&gt;Doctorate, Industrial and Organizational Psychology, The Ohio State University, 1983</td>
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<td>Kramer, Dawn</td>
<td>Instructor</td>
<td>Bachelors, University of Colorado, 1993</td>
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<td>Krapf, Diego</td>
<td>Associate Professor</td>
<td>Bachelors, Hebrew University of Jerusalem, 1997&lt;br&gt;Masters, Hebrew University of Jerusalem, 2000&lt;br&gt;Doctorate, Hebrew University of Jerusalem, 2004</td>
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<td>Kraus, Jennifer</td>
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<td>Krause, Daniel</td>
<td>Professor</td>
<td>Doctorate, Arizona State University, 1995</td>
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<td>Kreidenweis-Dandy, Sonia</td>
<td>Professor</td>
<td>Bachelors, Chemical Engin., MANHATTAN COLL, 1983&lt;br&gt;Masters, Chemical Engin., CAL INST TECH, 1985&lt;br&gt;Doctorate, Chemical Engin., CAL INST TECH, 1989</td>
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<td>Kreider, Jodie</td>
<td>Instructor</td>
<td>Bachelors, Colorado State University, 2001&lt;br&gt;Masters, Washington University - St Louis, 2004&lt;br&gt;Doctorate, University of Arizona, 2008</td>
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<td>Kroll, Stephan</td>
<td>Associate Professor</td>
<td>Bachelors, Mathematics, Other, University of Dortmund (Germany), 1991&lt;br&gt;Masters, Economics, General, Univ of Wyoming, 1996&lt;br&gt;Doctorate, Economics, General, Univ of Wyoming, 1999</td>
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<tr>
<td>Krueger, David</td>
<td>Professor</td>
<td>Bachelors, Physics, General, MONTANA STATE U, 1961&lt;br&gt;Doctorate, Physics, General, U OF WASHINGTON, 1967</td>
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<tr>
<td>Kruh-Garcia, Nicole</td>
<td>Assistant Professor</td>
<td>Bachelors, Biology, General, New York University, 1999&lt;br&gt;Doctorate, Microbiology/Bacteriology, Stony Brook University, 2007</td>
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<td>Krummel, Amber</td>
<td>Assistant Professor</td>
<td>Bachelors, Portland State University, 2001&lt;br&gt;Doctorate, Chemistry, General, University of Wisconsin - Madison, 2007</td>
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<td>Kuk, Linda</td>
<td>Associate Professor</td>
<td>Bachelors, Social Work, Colorado State University, 1972&lt;br&gt;Masters, College/Postsecondary Student Counseling and Personnel Services, Colorado State University, 1973&lt;br&gt;Doctorate, Higher Education Administration, Iowa State University, 1981</td>
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<td>Kummerow, Christian</td>
<td>Professor</td>
<td>Certificate, U OF CA,BERK, 1982&lt;br&gt;Doctorate, U OF MN, 1987</td>
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<td>Kutcher, Lisa</td>
<td>Professor</td>
<td>Bachelors, Chapman University, 1995&lt;br&gt;Doctorate, University of Colorado, 1999</td>
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| Kwiatkowski, Lynn  | Associate Professor | Bachelors, Anthropology, Univ of Massachusetts, Amherst, 1983  
Masters, Anthropology, Univ of California, Berkeley, 1989  
Doctorate, Anthropology, Univ of California, Berkeley, 1994 |
| La Belle, Jason    | Associate Professor | Doctorate, Anthropology, Southern Methodist University, 2005                  |
| Labadie, John      | Professor         | Bachelors, Engin., General, University of California, Berkeley, 1966  
Masters, Water Resources Engin., University of California, Berkeley, 1968  
Doctorate, Industrial/Manufacturing Engin., University of California, Berkeley, 1972 |
| Lacy, Michael      | Associate Professor | Bachelors, Sociology, U OF KANSAS, 1973  
Masters, Sociology, U OF KANSAS, 1978  
Doctorate, Sociology, U OF KANSAS, 1981 |
| Lagasse, Ashley    | Associate Professor | Bachelors, University of Kansas, 2001  
Masters, Colorado State University, 2004  
Doctorate, University of Kansas, 2009 |
| Laituri, Melinda   | Professor         | Bachelors, Geography, University of California, Berkeley, 1979  
Masters, Geography, California State University, 1985  
Doctorate, Geography, University of Arizona, 1993 |
| Lambrechts, Nicolaas | Associate Professor | Professional, Veterinary Medicine (D.V.M.), University of Pretoria, South Africa, 1985  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Pretoria, South Africa, 1993 |
| Lana, Susan        | Professor         | Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1993  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 1997 |
| Landers, Heather   | Instructor        | Masters, Colorado State University                                             |
| Landers, James     | Instructor        | Doctorate, Journalism, University of Wisconsin, Madison, 2000                 |
| Landers, Stuart    | Instructor        | Bachelor's, History, General, University of North Florida, 1990  
Certificate, Teaching English as a Second Language/Foreign Language, Univ of Cambridge/Aust TESOL Training CTR, 2001  
Masters, Teaching English as a Second Language/Foreign Language, Monterey Inst of Intl Studies, 2004 |
| Landfester, Petra  | Assistant Professor | Professional, Veterinary Medicine (D.V.M.), University of Zurich, Switzerland, 1993  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Zurich, Switzerland, 1995  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Wisconsin-Madison, 2000  
Doctorate, Virology, University of Wisconsin-Madison, 2005 |
| Landolt, Gabriele  | Associate Professor | Professional, Veterinary Medicine (D.V.M.), University of Zurich, Switzerland, 1993  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Zurich, Switzerland, 1995  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), University of Wisconsin-Madison, 2000  
Doctorate, Virology, University of Wisconsin-Madison, 2005 |
| Landreth, Janet    | Professor         | Bachelor's, Music - General Performance, UNIV OF TULSA, 1965  
Masters, Music - General Performance, UNIV OF TULSA, 1967  
Doctorate, Music - General Performance, U OF OKLAHOMA, 1980 |
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<td>Lane, Judith</td>
<td>Instructor</td>
<td>Bachelors, Ithaca College, 1966&lt;br&gt;Masters, University of Northern Colorado, 1972</td>
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<tr>
<td>Lang, Linda</td>
<td>Assistant Professor</td>
<td>Bachelors, Basic Medical Sciences, Other, Texas A M University, 2002&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), Texas A M University, 2005&lt;br&gt;Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Washington State University, 2015</td>
</tr>
<tr>
<td>Langstraat, Lisa</td>
<td>Associate Professor</td>
<td>Bachelors, Southern Illinois Univ. at Edwardsville, 1985&lt;br&gt;Masters, Southern Illinois Univ. at Edwardsville, 1987&lt;br&gt;Doctorate, Purdue University, 1996</td>
</tr>
<tr>
<td>Lappin, Michael</td>
<td>Professor</td>
<td>Bachelors, Veterinary Medicine (D.V.M.), OKLA ST UN, 1977&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), OKLA ST UN, 1981&lt;br&gt;Doctorate, Parasitology, UNIV GEORGIA, 1988</td>
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<tr>
<td>Lapsansky, Erin</td>
<td>Instructor</td>
<td>Bachelors, Biology, General, Gonzaga University, 2014&lt;br&gt;Masters, Colorado State University, 2016</td>
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<tr>
<td>LaRue, Susan</td>
<td>Professor</td>
<td>Professional, Veterinary Medicine (D.V.M.), U OF GEORGIA, 1977&lt;br&gt;Masters, Surgical/Operating Room Technician, COLO STATE UNIV, 1986&lt;br&gt;Doctorate, Radiation Biology/Radiobiology, COLO STATE UNIV, 1992</td>
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<td>Lasher, Lynn</td>
<td>Instructor</td>
<td>Bachelors, European History, San Jose State University, 1987&lt;br&gt;Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 1997</td>
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<td>Laughman, Ingrid</td>
<td>Instructor</td>
<td>Bachelors, Massachusetts Institute of Technology, 2000&lt;br&gt;Doctorate, University of Colorado Boulder, 2011</td>
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<tr>
<td>Laun, Cody</td>
<td>Assistant Professor</td>
<td>Bachelors, Biology, General, U OF CALIFORNIA, 1981&lt;br&gt;Doctorate, Biochemistry, U OF CALIFORNIA, 1989</td>
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<tr>
<td>Laybourn, Paul</td>
<td>Professor</td>
<td>Bachelors, Recreation Products/Services Marketing Operations, Colorado State University, 1991&lt;br&gt;Masters, Recreation Products/Services Marketing Operations, Colorado State University, 1998</td>
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<tr>
<td>Layden, Paul</td>
<td>Instructor</td>
<td>Bachelors, Recreation Products/Services Marketing Operations, Colorado State University, 1991&lt;br&gt;Masters, Recreation Products/Services Marketing Operations, Colorado State University, 1998</td>
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<tr>
<td>Leach, Heather</td>
<td>Assistant Professor</td>
<td>Bachelors, Biology, General, Gonzaga University, 2014&lt;br&gt;Masters, Colorado State University, 2016</td>
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<tr>
<td>Leach, Jan</td>
<td>Professor</td>
<td>Bachelors, Microbiology/Bacteriology, UNIVERSITY OF NEBRASKA, LINCOLN, 1975&lt;br&gt;Masters, Microbiology/Bacteriology, UNIVERSITY OF NEBRASKA, LINCOLN, 1977&lt;br&gt;Doctorate, Plant Pathology, University of Wisconsin, Madison, 1981</td>
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<tr>
<td>Leal, Francisco</td>
<td>Associate Professor</td>
<td>Doctorate, Washington University, St. Louis, 2007</td>
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<td>Leary, Del</td>
<td>Assistant Professor</td>
<td>Doctorate, Medical Physics/Biophysics, Dalhousie University, 2013</td>
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| Lechleitner, Elizabeth | Instructor | Bachelors, Colorado State University, 1981  
Masters, Colorado State University, 1984 |
| Lederer, Naomi  | Professor              | Bachelors, English Language and Literature, General, Carleton College, 1987  
Masters, Library Science/Librarianship, Univ of Illinois, 1988  
Masters, English Language and Literature, General, Arizona State University, 1992 |
| Lee, Chihoon   | Associate Professor    | Bachelors, Mathematical Statistics, Seoul National University, 2003  
| Lee, Doreen    | Instructor             | Masters, Peabody Institute of Johns Hopkins University, 2008                               |
| Lee, Julie     | Instructor             | Bachelors, Spanish Language and Literature, LeMoyne College, 1990  
Masters, Secondary Teacher Education, Adams State College, 1997 |
| Lee, Siu Au    | Professor              | Bachelors, Applied Mathematics, Other, U OF WISCONSIN, 1970  
Masters, Physics, General, STANFORD UNIV, 1972  
Doctorate, Physics, General, STANFORD UNIV, 1976 |
| Lefsky, Michael| Professor              | Bachelors, Environmental Science/Studies, Bard College, 1988  
Doctorate, University of Virginia, 1997 |
| Legare, Marie  | Associate Professor    | Masters, Montana State University, 1983  
Professional, Veterinary Medicine (D.V.M.), Texas AM, 1991  
Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Texas AM, 1995 |
| Lehene, Marius | Professor              | Bachelors, Economics, General, Babes-Bolyai University, 1996  
Masters, Fine/Studio Arts, Southern Methodist University, 2001 |
| Leigh, Katharine | Professor           | Bachelors, Interior Design, American University, 1972  
Masters, Interior Design, University of Massachusetts at Amherst, 1976  
Doctorate, Organizational Behavior Studies, Colorado State University, 2011 |
| Lenaerts, Anne | Professor              | Bachelors, University of Gent, Belgium, 1988  
Doctorate, University of Gent, Belgium, 1996 |
| Lenk, Margarita| Associate Professor    | Bachelors, Accounting, U OF C FLORIDA, 1981  
Masters, Accounting, U OF N CAROLINA, 1987  
Doctorate, Accounting, U OF S CAROLINA, 1991 |
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| Leonard, Miriam | Instructor      | Bachelors, Elementary Teacher Education, University of Northern Colorado, 1982  
Masters, Teacher Education, Specific Academic and Vocational Program, Colorado State University, 1992 |
| Lessor, Edward   | Instructor       | Bachelors, University of Chicago, 1989  
Masters, Florida State University, 2002 |
| Levalley, Stephen | Assistant Professor | Bachelors, Animal Sciences, General, COLO STATE UNIV, 1976  
Masters, Agricultural Animal Breeding and Genetics, COLO STATE UNIV, 1978  
Doctorate, COLORADO STATE UNIVERSITY, 1999 |
| Level, Allison   | Professor        | Bachelors, Public Administration, University of Arkansas, 1981  
Masters, Higher Education Administration, Kent State University, 1985  
Masters, Emporia State University, 1990 |
| Levin, Jennifer  | Instructor       | Bachelors, Physics, Other, NORTHWESTERN UNIVERSITY, 1983  
Doctorate, Chemical and Atomic/Molecular Physics, UNIVERSITY OF COLORADO BOULDER, 1990 |
| Levi, Nancy      | Professor        | Bachelors, Elementary Teacher Education, University of Northern Colorado, 1982  
Masters, Teacher Education, Specific Academic and Vocational Program, Colorado State University, 1992 |
| Li, Kaigang      | Assistant Professor | Bachelors, National Taiwan University, 1995  
Associates, California State Univ, 2007  
Doctorate, University of Wisconsin, Madison, 2013 |
| Li, Li           | Instructor       | Bachelors, Materials Science, Donghua University, Shanghai, 2000  
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Doctorate, Textile Sciences and Engin., Cornell University, 2009 |
| Li, Yan          | Assistant Professor | Bachelors, Biological Sciences/Life Sciences, Other, Massachusetts Institute of Technology, 1974  
Doctorate, Massachusetts Institute of Technology, 1980 |
| Liber, Howard    | Professor        | Bachelors, Parks, Recreation and Leisure Studies, Colorado State University, 1980  
Masters, Occupational Safety and Health Tech./Technician, West Virginia University, 1983  
Doctorate, Curriculum and Instruction, University of Southern California, 1992 |
| Light, Elinor    | Instructor       | Bachelors, Monmouth College, 1967  
Masters, Colorado State University, 1970 |
| Lilly, Judith    | Instructor       | Bachelors, Yale University, 1986  
Doctorate, Ohio State University, 2002 |
| Lindeen-Martin, Cindy | Assistant Professor | Bachelors, International Relations and Affairs, Princeton University, 1999  
Doctorate, Geography, University of California, Berkeley, 2009 |
| Lindenbaum, John | Instructor       | Bachelors, History, General, University of Wisconsin - Madison, 1994 |
| Lindsay, James   | Professor        | Doct
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<td>Little, Ann</td>
<td>Associate Professor</td>
<td>Bachelors, History, General, Bryn Mawr, 1990 Masters, American (United States) History, University of Pennsylvania, 1991 Doctorate, American (United States) History, University of Pennsylvania, 1996</td>
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<tr>
<td>Liu, Jiangguo</td>
<td>Professor</td>
<td>Bachelors, Mathematics, Wuhan University, 1983 Masters, Mathematics, University of South Carolina, 1999 Professional, Mathematics, University of South Carolina, 2001</td>
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<td>Livingston, Marie</td>
<td>Instructor</td>
<td>Bachelors, Utah State Univ, 1977 Masters, Un iv. of Arizona, 1979 Doctorate, Colorado State Univ, 1982</td>
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<td>Lloyd D'Onofrio, Karen</td>
<td>Instructor</td>
<td>Bachelors, David Lipscomb University, 2004 Doctorate, University of South Carolina</td>
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<td>Lockwood, James</td>
<td>Assistant Professor</td>
<td>Bachelors, Agricultural Engin., Oklahoma State University, 1974 Masters, Agricultural Engin., Colorado State University, 1976 Doctorate, Agricultural Engin., Colorado State University, 1978</td>
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<td>Long, Ziyu</td>
<td>Assistant Professor</td>
<td>Masters, Organizational Behavior Studies, Purdue University, 2011 Doctorate, Organizational Behavior Studies, Purdue, 2015 Bachelors, Communication University of China</td>
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<td>Longchamps, Louis</td>
<td>Assistant Professor</td>
<td>Bachelors, Psychology, General, California State University - Northridge, 1975 Masters, Education, General, Colorado State University, 1982</td>
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<td>Lopes, Tobin</td>
<td>Assistant Professor</td>
<td>Bachelors, Psychology, General, California State University - Northridge, 1975 Masters, Education, General, Colorado State University, 2002 Doctorate, Education Administration and Supervision, General, Penn. State University, 2006</td>
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<td>Lopez Ramirez, Maria del Carmen</td>
<td>Instructor</td>
<td>Bachelors, Psychology, General, California State University - Northridge, 1975 Masters, Education, General, Colorado State University, 2002 Doctorate, Education Administration and Supervision, General, Penn. State University, 2006</td>
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<td>Lopez-Cabrales, Maria</td>
<td>Professor</td>
<td>Bachelors, Spanish Language and Literature, Universidad de Cadiz, 1990 Masters, Spanish Language and Literature, University of Pittsburgh, 1993 Certificate, Latin American Studies, University of Pittsburgh, 1995 Doctorate, Spanish Language and Literature, University of Pittsburgh, 1996</td>
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<td>Professional, Veterinary Medicine (D.V.M.), University of Tennessee, 2011</td>
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<td>Luft, Gregory</td>
<td>Professor</td>
<td>Bachelors, Journalism, COLO STATE UNIV, 1980 Masters, Broadcast Journalism, AMERICAN UNIV, 1984</td>
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<td>Lundberg, Thomas</td>
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<td>Bachelors, Painting, U OF IOWA, 1975 Masters, Clothing/ Apparel and Textile Studies, INDIANA UNIV, 1979</td>
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<td>Lundeen, Stephen</td>
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<td>Bachelors, Physics, General, TRINITY COL CT, 1969 Masters, Physics, General, HARVARD UNIV, 1970 Doctorate, Physics, General, HARVARD UNIV, 1975</td>
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<td>Lunkenheimer, Erika</td>
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<td>Bachelors, Psychology, General, Northwestern University, 1996 Masters, Family and Marriage Counseling, Northwestern University, 1999 Masters, Developmental and Child Psychology, University of Michigan, 2003 Certificate, Mental Health Services, Other, University of Michigan, 2004 Doctorate, Developmental and Child Psychology, University of Michigan, 2006</td>
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<td>Bachelors, Fudan University, 1995 Masters, Fudan University, 1998 Doctorate, Univ of Connecticut, 2002</td>
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<td>Bachelors, University of California, Riverside, 2006 Masters, University of California, Irvine, 2008 Doctorate, University of California, Irvine, 2012</td>
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<td>Lynham, Susan</td>
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<td>Bachelors, Business/ Managerial Economics, University of Stellenbosch, SA, 1980 Masters, Organizational Behavior Studies, University of Minnesota, 1992</td>
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<td>Bachelors, Marquette University, 1984 Masters, Marquette University, 1987 Doctorate, Purdue University, 1992</td>
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<td>Macera Carnero, Manuel</td>
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<td>Bachelors, Universidad Nacional Agraria La Mount, 2001 Masters, Universidad Torcuato Di Tella, 2005 Doctorate, University of Minnesota, 2013</td>
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<td>Bachelors, Chemistry, General, Williams College, 1991 Doctorate, Biochemistry, University of Wisconsin Madison, 1996</td>
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<td>Instructor</td>
<td>Bachelors, Social Work, CREIGHTON UNIV, 1983</td>
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<td>Makela, Carole</td>
<td>Professor</td>
<td>Bachelors, Home Economics Teacher Education (Vocational), U OF WISCONSIN, 1964</td>
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<td>Masters, Consumer Economics and Science, COLO STATE UNIV, 1968</td>
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<td>Doctorate, Educational Evaluation and Research, UNIV OF N COLO, 1977</td>
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Malaiya, Yashwant  Professor  Masters, Physics, General, SAUGOR U, 1971
Masters, Electrical and Electronic Engin.-Related Technol./Technician, BITS INDIA, 1974
Doctorate, Electrical, Electronics and Communication Engin., UTAH STATE UNIV, 1978

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Manmathan, Harish  Assistant Professor  Doctorate, Biological Sciences/Life Sciences, Other, Univ of Maine, 2009

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Manning, Kenneth  Professor  Bachelors, Business Administration and Management, General, Colorado State University, 1986
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Manning, Steven  Instructor  Bachelors, Tech. Teacher Education/Industrial Arts Teacher Education, FT HAYS STATE, 1980
Masters, Business Administration and Management, General, FT HAYS STATE, 1984
Doctorate, Business Management and Administration Services, Other, U OF NEBRASKA, 1988
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<td>Mao, KuoRay</td>
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<td>Bachelors, California State University-Fullerton, 2004 Masters, University of Kansas, 2009 Doctorate, University of Kansas, 2015</td>
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<td>Marcon, Mario</td>
<td>Professor</td>
<td>Bachelors, History, General, Pomona College, 1982 Masters, History, General, Yale Univ., 1985 Doctorate, History, General, Yale Univ., 1990</td>
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<td>Margolf, Diane</td>
<td>Professor</td>
<td>Bachelors, University of Colorado, 1994 Doctorate, University of Colorado, 1999</td>
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<td>Markus, Steven</td>
<td>Assistant Professor</td>
<td>Doctorate, Microbiology/Bacteriology, New York University, 2003</td>
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<td>Markman, Gideon</td>
<td>Professor</td>
<td>Bachelors, Biology, General, University of Colorado, 1996 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2002</td>
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<td>Marvin, William</td>
<td>Instructor</td>
<td>Bachelors, Sculpture, Colorado State University, 1971 Masters, Painting, Colorado State University, 1988</td>
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<td>Martey, Rosa</td>
<td>Associate Professor</td>
<td>Associates, Communications, General, Y, 2005</td>
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<td>Martin, Jennifer</td>
<td>Assistant Professor</td>
<td>Bachelors, Animal Sciences, General, Texas Tech University, 2007 Masters, Animal Sciences, General, Texas Tech University, 2010 Doctorate, Texas Tech University, 2014</td>
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<td>Martin, Kelly</td>
<td>Associate Professor</td>
<td>Bachelors, Gonzaga Univ., 1999 Masters, Creighton Univ., 2002 Doctorate, Washington State Univ., 2007</td>
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<td>Martin, Michael</td>
<td>Assistant Professor</td>
<td>Bachelors, University of Illinois at Urbana/Champaign, 2005 Masters, University of Illinois at Urbana/Champaign, 2007 Doctorate, University of Missouri, 2013</td>
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<td>Martin, Patrick</td>
<td>Associate Professor</td>
<td>Bachelors, St. Andrews University, Scotland, 1994 Masters, St. Andrews University, Scotland, 1994 Masters, Yale University-School of Forestry/Environmental Studies, 1998 Doctorate, Cornell University, 2005</td>
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<td>Martin, William</td>
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<td>Martinez, Doreen</td>
<td>Instructor</td>
<td>Bachelors, Psychology, General, Mansfield University, 1987 Masters, Exercise Sciences/Physiology and Movement Studies, West Virginia University, 1988 Doctorate, Sociology, Syracuse University, 2003</td>
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<td>Martinez, Gayla</td>
<td>Instructor</td>
<td>Bachelors, Colorado State University, 1978 Masters, University of Northern Colorado, 2007</td>
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<td>Marvin, William</td>
<td>Associate Professor</td>
<td>Bachelors, University of Denver, 1985 Doctorate, Univ. of Minnesota, 1998</td>
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| Marx, Nicholas  | Assistant Professor | Bachelors, Communications, Other, University of Wisconsin Madison, 2003  
|                 |                   | Masters, Communications, Other, University of Texas at Austin, 2006      
|                 |                   | Doctorate, Communications, Other, University of Wisconsin-Madison, 2012  |
| Masciarelli, Kyla | Instructor       | Bachelors, Elementary Teacher Education, College of Charleston, 2007    
|                 |                   | Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2013 |
| Masden, Dana    | Instructor       | Bachelors, Miami University, 2005                                       
|                 |                   | Masters, Colorado State University, 2008                               |
| Mason, Gary     | Associate Professor | Bachelors, Colorado State University, 1980                             
|                 |                   | Professional, Veterinary Medicine (D.V.M.), Texas AM University, 1988   
|                 |                   | Masters, Texas AM University, 1989                                     
|                 |                   | Doctorate, University of Tennessee-Knoxville, 1999                     |
| Massey, Daniel  | Associate Professor | Bachelors, Mathematics and Computer Science, University of California at San Diego, 1990 
|                 |                   | Masters, Computer Science, UCLA, 1996                                 
|                 |                   | Doctorate, Computer Science, UCLA, 2000                                |
| Mathison, Candace | Assistant Professor | Bachelors, Microbiology/Bacteriology, University of Wyoming, 1983      
|                 |                   | Masters, Parasitology, University of Wyoming, 1987                     
|                 |                   | Doctorate, Pathology, Human and Animal, Colorado State University, 2010 |
| Mathis, Justin  | Assistant Professor | Associates, Liberal Arts and Sciences/Liberal Studies, Northeast        
|                 |                   | Mississippi Community College, 2004                                   
|                 |                   | Professional, Veterinary Medicine (D.V.M.), Mississippi State University, 2009 
|                 |                   | Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2013 |
| Mattingly, Victoria | Instructor |                                                                 |
| Mayer, Adam     | Instructor       | Bachelors, College of William and Mary, 1993                           
|                 |                   | Masters, University of Denver, 2002                                    
|                 |                   | Doctorate, University of Connecticut, 2007                            |
| Mayo, Christie  | Assistant Professor | Bachelors, Pre-Veterinary Studies, Clemson University, 2003             
|                 |                   | Professional, Veterinary Medicine (D.V.M.), University of Georgia, 2006  
|                 |                   | Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2010 |
| Mazurana, Amber | Instructor       | Bachelors, Butler University, 1999                                    |
| McArthur, Kelly  | Assistant Professor | Bachelors, Engin., General, HARVARD UNIV, 1981                        
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|                 |                   | Doctorate, Mathematics, MONTANA STATE U, 1987                         |
| McConnel, Craig | Assistant Professor | Bachelors, Education, General, Cornell University, 1994                
<p>|                 |                   | Professional, Veterinary Medicine (D.V.M.), Washington State University, 2002 |
|                 |                   | Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Colorado State University, 2010 |</p>
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<td>Bachelors, Art History, Criticism and Conservation, The University of Victoria, 1998</td>
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<td>Masters, Library Science/Librarianship, University of British Columbia, 2002</td>
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<td>Miller, Benjamin</td>
<td>Associate Professor</td>
<td>Bachelors, Exercise Sciences/Physiology and Movement Studies, University of Wisconsin, 1995 Masters, Exercise Sciences/Physiology and Movement Studies, University of Wisconsin, 1998 Doctorate, Biology, General, University of California-Berkley, 2002</td>
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<td>Miller, Charles</td>
<td>Professor</td>
<td>Bachelors, Biology, General, PURDUE UNIV, 1964 Masters, Physiology, Human and Animal, COLO STATE UNIV, 1966 Doctorate, Physiology, Human and Animal, COLO STATE UNIV, 1969</td>
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<td>Miller, Diane</td>
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<td>Bachelors, General Studies, University of Kansas, 1983 Associates, Culinary Arts/Chef Training, New England Culinary Institute, 1986 Masters, Hotel/Motel and Restaurant Management, Kansas State University, 1995 Doctorate, Education, General, Colorado State University, 2006</td>
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<td>Miller, Margaret</td>
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<td>Miller, Nancy</td>
<td>Professor</td>
<td>Bachelors, Fashion Merchandising, University of Nebraska-Lincoln, 1976 Masters, Fashion Design and Illustration, University of Nebraska-Lincoln, 1979 Doctorate, Fashion Merchandising, University of Nebraska-Lincoln, 1994</td>
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<td>Miranda, Jeanne</td>
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<td>Bachelors, Mathematics, UNIV OF TEXAS, 1974</td>
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<td>Bachelors, Business Administration and Management, General, U OF MARYLAND, 1964</td>
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<td>Bachelors, Art History, Criticism and Conservation, Swarthmore College, 2001&lt;br&gt; Masters, English Creative Writing, West Virginia University, 2004&lt;br&gt; Masters, Art History, Criticism and Conservation, University of California, Berkeley, 2007&lt;br&gt; Doctorate, Art History, Criticism and Conservation, University of California, Berkeley, 2012</td>
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<td>Bachelors, Biology, General, Rice Univ, 1970&lt;br&gt; Masters, Zoology, General, Univ of Texas, 1974&lt;br&gt; Doctorate, Biology, General, Univ of NM, 1981</td>
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<td>Bachelors, North Carolina State University, 2000&lt;br&gt; Professional, North Carolina State University, 2004&lt;br&gt; Masters, Oklahoma State University, 2009&lt;br&gt; Certificate, ACVS, 2010&lt;br&gt; Doctorate, Colorado State University, 2013</td>
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<td>Mueller, Jennifer</td>
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| Nelson, Peter        | Assistant Professor | Bachelors, Princeton University, 2003  
Doctorate, University of California, Berkeley, 2010                                            |
| Nelson-Ceschin, Tracy| Professor       | Bachelors, Athletic Training and Sports Medicine, Colorado State University, 1991  
Masters, Public Health Education and Promotion, University of Northern Colorado - Greeley, 1993  
Doctorate, Physiological Psychology/ Psychobiology, Penn State, 1998                                 |
| Nett, Torrance       | Professor       | Bachelors, Animal Sciences, General, MONTANA STATE U, 1968  
Doctorate, Physiology, Human and Animal, WASHINGTON ST U, 1972                                     |
| Newhouse, Amy        | Assistant Professor | Bachelors, English Literature (British and Commonwealth), Eastern Kentucky University, 2009  
Masters, English Composition, Eastern Kentucky University, 2011  
Masters, Library Science, Other, University of Kentucky, 2014                                        |
| Newhouse, Mark       | Instructor      | Bachelors, Purdue University, 1981  
Doctorate, University of Pennsylvania, 1987                                                        |
| Newkirk, Tenaya       | Assistant Professor | Bachelors, Molecular Biology, University of Colorado-Boulder, 2005  
Doctorate, Chemistry, General, Colorado State University, 2009                                    |
| Newman, Steven       | Professor       | Bachelors, Parks, Recreation and Leisure Facilities Management, MONTANA STATE U, 1977  
Masters, Horticulture Science, U NEBRASKA-LINC, 1981  
Doctorate, Horticulture Science, TEXAS AM, 1985                                                    |
| Nichols, Kimberly    | Instructor      | Associates, Liberal Art and Sciences, General Studies and Humanities, West Valley College, 1992  
Associates, Social Sciences, General, West Valley College, 1992  
Bachelors, Anthropology, Univ of CA at Santa Cruz, 1995  
Masters, Anthropology, Univ of CO at Boulder, 1998                                                 |
| Nickoloff, Jac       | Professor       | Bachelors, Biochemistry, University of California, Santa Barbara, 1978  
Doctorate, Biochemistry, University of Colorado, 1984                                               |
| Niemann, Jeffrey     | Associate Professor | Bachelors, University of Colorado, 1993  
Masters, Massachusetts Institute of Technology, 1997  
Doctorate, Massachusetts Institute of Technology, 2001                                               |
| Niles, Gene          | Associate Professor | Bachelors, Agricultural Animal Nutrition, Oklahoma State University, 1972  
Professional, Veterinary Medicine (D.V.M.), Oklahoma State University, 1975  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Oklahoma State University, 2002               |
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<td>O'Connor, Benjamin</td>
<td>Instructor</td>
<td>Bachelors, New Mexico State</td>
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<tr>
<td>O'Dell, Gretchen</td>
<td>Assistant Professor</td>
<td>Bachelors, Carleton College, 2000 Masters, University of Wisconsin, 2003 Doctorate, University of Wisconsin, 2009</td>
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<tr>
<td>O'Leary, Joseph</td>
<td>Professor</td>
<td>Bachelors, Forest Management, University of New Brunswick, 1969 Masters, Forestry, General, Yale University, 1971 Doctorate, Natural Resources Conservation, General, University of Washington, 1974</td>
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<tr>
<td>O'Reilly, Michael</td>
<td>Instructor</td>
<td>Bachelors, Construction and Building Finishers and Managers, Other, Virginia Polytechnic Institute, 1979 Masters, Civil Engin., General, University of South Carolina, 1987</td>
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<tr>
<td>Oad, Ramchand</td>
<td>Professor</td>
<td>Bachelors, Civil Engin., General, Karachi University, 1970 Masters, Civil Engin., General, Asian Institute of Technology, Bangkok, Thailand, 1973 Doctorate, Agricultural Engin., Cornell University, 1981</td>
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<tr>
<td>Name</td>
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<tr>
<td>Ocheltree, Troy</td>
<td>Assistant Professor</td>
<td>Bachelors, Biology, General, University of Minnesota-Morris, 1997 Masters, Forestry and Related Sciences, Other, University of Idaho, 2002 Doctorate, Agronomy and Crop Science, Kansas State University, 2012</td>
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<tr>
<td>Ode, Paul</td>
<td>Associate Professor</td>
<td>Bachelors, Biology, General, Earlham College, 1986 Masters, Entomology, Univ Wisconsin - Madison, 1990 Doctorate, Entomology, Univ Wisconsin - Madison, 1994</td>
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<tr>
<td>Odonnell-Allen, Cindy</td>
<td>Professor</td>
<td>Bachelors, Univ. of Oklahoma, 1987 Masters, Univ. of Oklahoma, 1994 Doctorate, Univ. of Oklahoma, 1999</td>
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<tr>
<td>Oehlerts, Beth</td>
<td>Associate Professor</td>
<td>Bachelors, History, General, California State Univ, Northridge, 1979 Masters, Library Science/Librarianship, Clark Atlanta University, 1993</td>
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<tr>
<td>Ogle, Jennifer</td>
<td>Professor</td>
<td>Bachelors, Clothing/Apparel and Textile Studies, Iowa State University, 1993 Masters, Family and Community Studies, University of Illinois-Champaign, 1995 Doctorate, Clothing/Apparel and Textile Studies, Iowa State University-Ames, 1999</td>
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<tr>
<td>Ogle, Stephen</td>
<td>Associate Professor</td>
<td>Bachelors, Emory University, Atlanta, GA, 1992 Masters, University of Wyoming, 1995 Doctorate, University of Wyoming, 2000</td>
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<tr>
<td>Olschanowsky, Catherine</td>
<td>Assistant Professor</td>
<td>Bachelors, Computer Science, University of California at San Diego, 2001 Masters, Univ of California at San Diego, 2004 Doctorate, Computer Science, University of California at San Diego, 2011</td>
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<tr>
<td>Olschanowsky, Catherine</td>
<td>Assistant Professor</td>
<td>Bachelors, Computer Science, University of California at San Diego, 2001 Masters, Univ of California at San Diego, 2004 Doctorate, Computer Science, University of California at San Diego, 2011</td>
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<td>Olsen, Ryan</td>
<td>Assistant Professor</td>
<td>Bachelors, University of Missouri-Kansas City, 2001 Masters, University of Missouri-Kansas City, 2007 Doctorate, Arizona State University, 2010</td>
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<tr>
<td>Olson, Kenneth</td>
<td>Professor</td>
<td>Bachelors, Zoology, General, N CAROLINA ST U, 1974 Masters, Microbiology/ Bacteriology, COLO STATE UNIV, 1984 Doctorate, Microbiology/ Bacteriology, COLO STATE UNIV, 1990</td>
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<tr>
<td>Olver, Christine</td>
<td>Associate Professor</td>
<td>Bachelors, University of North Carolina, Chapel Hill, 1983 Professional, Ohio State University, 1987 Doctorate, Ohio State University, 1994</td>
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<tr>
<td>Omur-Ozbek, Pinar</td>
<td>Assistant Professor</td>
<td>Bachelors, Middle East Technical University, Ankara, Turkey, 2002 Masters, Virginia Tech, 2004 Doctorate, Virginia Tech, 2008</td>
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<td>Ooi, Natalie</td>
<td>Assistant Professor</td>
<td>Bachelors, Parks, Recreation, Leisure and Fitness Studies, Other, Monash University, 2006 Masters, Business, General, Monash University, 2008 Doctorate, Business/ Managerial Economics, Monash University, Berwick VIC, 2013</td>
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<tr>
<td>Opler, Paul</td>
<td>Professor</td>
<td>Masters, Entomology, University of California State at San Jose, 1965 Doctorate, Entomology, University of California, 1970</td>
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<td>Opp, Jaclyn</td>
<td>Associate Professor</td>
<td>Doctorate, University of Louisville, 2007</td>
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<td>Oprea, Iuliana</td>
<td>Associate Professor</td>
<td>Professional, Mathematics, INLN-CNRS, Nice, France, 1994</td>
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<td>Opsal, Tara</td>
<td>Associate Professor</td>
<td>Doctorate, University of Colorado, 2009 Bachelors, University of Colorado</td>
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<td>Opsomer, Jean</td>
<td>Professor</td>
<td>Masters, Business Management and Administrative Services, Other, Katholieke Universiteit Leuven, 1986 Masters, Business Administration and Management, Other, University of Chicago, 1987 Doctorate, Operations Management and Supervision, Cornell University, 1995</td>
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<td>Ordway, Diane</td>
<td>Associate Professor</td>
<td>Bachelors, Colorado State University, 1992 Doctorate, Univ of London, School of Hygiene Trop Med, 2000</td>
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<td>Orme, Ian</td>
<td>Professor</td>
<td>Bachelors, Physiology, Human and Animal, UNIV OF LONDON, 1977 Certificate, Biological Sciences/Life Sciences, Other, UNIV OF LONDON, 1980 Doctorate, Biological Sciences/Life Sciences, Other, UNIV OF LONDON, 1981</td>
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<td>Orsi, Jared</td>
<td>Professor</td>
<td>Doctorate, History, General, University of Wisconsin, 1999</td>
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<td>Orswell, Nicole</td>
<td>Instructor</td>
<td>Bachelors, English Teacher Education, University of Northern Colorado, 1993 Masters, Education, General, University of Phoenix, 1999</td>
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<td>Osborne, Erika</td>
<td>Associate Professor</td>
<td>Bachelors, Fine/Studio Arts, University of Utah, 2000 Masters, Fine/Studio Arts, University of New Mexico, 2005</td>
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<td>Osborne, George</td>
<td>Instructor</td>
<td>Bachelors, History, General, University of Colorado, 1978 &lt;br&gt;Masters, Education Administration and Supervision, General, Colorado State University, 2003</td>
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<td>Osincup, Paul</td>
<td>Instructor</td>
<td>Bachelors, University of Northern Colorado, 2000 &lt;br&gt;Masters, University of Northern Colorado, 2003</td>
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<td>Ostromensky, Vladimir</td>
<td>Instructor</td>
<td>Masters, Colorado State University, 2006</td>
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<td>Owens, David</td>
<td>Instructor</td>
<td>Masters, University of Southern California, 1982 &lt;br&gt;Masters, Naval Postgraduate School, 1984 &lt;br&gt;Masters, University of Colorado-Colorado Springs, 1998</td>
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<td>Ozbek, Mehmet</td>
<td>Associate Professor</td>
<td>Bachelors, Civil Engin., General, Middle East Technical University, 2002 &lt;br&gt;Masters, Civil Engin., General, Virginia Tech, 2004 &lt;br&gt;Doctorate, Civil Engin., General, Virginia Tech, 2007</td>
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<td>Pabilonia, Kristy</td>
<td>Associate Professor</td>
<td>Bachelors, University of Colorado, 1996 &lt;br&gt;Professional, Colorado State University, 2002 &lt;br&gt;Doctorate, Microbiology/Bacteriology, Colorado State University, 2012</td>
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<td>Packer, Rebecca</td>
<td>Associate Professor</td>
<td>Bachelors, Animal Sciences, Other, Bucknell University, 1993 &lt;br&gt;Masters, Zoology, Other, North Carolina State University, 1995 &lt;br&gt;Professional, Veterinary Medicine (D.V.M.), North Carolina State University, 2001</td>
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<td>Padilla, Moises</td>
<td>Instructor</td>
<td>Bachelors, Business Administration and Management, General, University of Nebraska, 2010 &lt;br&gt;Masters, Higher Education Administration, Colorado State University, 2012</td>
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<td>Page, Rodney</td>
<td>Professor</td>
<td>Bachelors, Chemistry, General, University of Colorado, 1975 &lt;br&gt;Masters, Physiology, Human and Animal, Georgetown University, 1977 &lt;br&gt;Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1981</td>
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<td>Pagliassotti, Michael</td>
<td>Professor</td>
<td>Bachelors, Biology, General, California State University, 1982 &lt;br&gt;Masters, Exercise Sciences/Physiology and Movement Studies, California State University, 1983 &lt;br&gt;Doctorate, Exercise Sciences/Physiology and Movement Studies, Univ of Southern California, 1988</td>
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<tr>
<td>Pallickara, Sangmi</td>
<td>Assistant Professor</td>
<td>Bachelors, Physics, General, Sookmyung University, 1993 &lt;br&gt;Masters, Computer and Information Sciences, Other, Syracuse University, 2000 &lt;br&gt;Doctorate, Computer Science, Florida State University, 2003</td>
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<td>Pallickara, Shrideep</td>
<td>Associate Professor</td>
<td>Bachelors, Electrical, Electronics and Communication Engin., Bombay University, 1994 &lt;br&gt;Masters, Computer Engin., Syracuse University, 1998 &lt;br&gt;Doctorate, Computer Engin., Syracuse University, 2001</td>
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<td>Palmer, Ross</td>
<td>Professor</td>
<td>Bachelors, Pre-Veterinary Studies, Kansas State University, 1982</td>
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<td>Doctorate, Veterinary Medicine (D.V.M.), Kansas State University, 1984</td>
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<td>Paltrinieri, Lorella</td>
<td>Instructor</td>
<td>Bachelors, English Language and Literature/Letters, Other, Italian School of Languages, 1991</td>
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<td>Panetta, Holly</td>
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<td>Bachelors, Journalism, Colorado State University, 1997</td>
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<td>Doctorate, Law (LL.B., J.D.), University of Denver, 2003</td>
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<td>Pante, Michael</td>
<td>Assistant Professor</td>
<td>Bachelors, Anthropology, Rutgers University, 2001</td>
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<td>Masters, Agricultural Business and Management, General, Rutgers University, 2006</td>
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<td>Papadopoulos, Christos</td>
<td>Professor</td>
<td>Certificate, Engin. Science, Higher Technical Institute, Cyprus, 1983</td>
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<td>Bachelors, Computer Science, Queens College (CUNY), 1989</td>
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<td>Paradise, Makie</td>
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<td>Masters, Colorado State University, 2000</td>
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<td>Park, Juyeon</td>
<td>Associate Professor</td>
<td>Bachelors, Clothing/Apparel and Textile Studies, Seoul National University, 1997</td>
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<td>Doctorate, Clothing/Apparel and Textile Studies, University of Minnesota, 2008</td>
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<td>Parker, Erica</td>
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<td>Doctorate, Alaska University</td>
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<td>Paschke, Mark</td>
<td>Professor</td>
<td>Bachelors, Forestry Sciences, University of Illinois at Urbana-Champaign, 1986</td>
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<td>Masters, Forestry General, University of Illinois at Urbana-Champaign, 1989</td>
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<td>Doctorate, Biology, General, University of Illinois, 1993</td>
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<td>Pasricha, Sudeep</td>
<td>Associate Professor</td>
<td>Doctorate, UC Irvine, 2008</td>
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<td>Patterson, Amber</td>
<td>Instructor</td>
<td>Bachelors, English Language and Literature, General, Colorado State University, 2005</td>
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<td>Masters, Teaching English as a Second Language/Foreign Language, Colorado Mesa University (Mesa State College), 2009</td>
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<td>Patton, Carl</td>
<td>Instructor</td>
<td>Bachelors, Physics, General, MA INST OF TECH, 1963</td>
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<td>Masters, Electrical, Electronics and Communication Engin., CA INST OF TECH, 1964</td>
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<td>Doctorate, Electrical, Electronics and Communication Engin., CA INST OF TECH, 1967</td>
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<td>Paulson, Joelle</td>
<td>Instructor</td>
<td>Bachelors, Landscape Architecture, UTAH STATE UNIV, 1972</td>
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<td>Paulson, Merlyn</td>
<td>Professor</td>
<td>Bachelors, Landscape Architecture, HARVARD UNIV, 1975</td>
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</table>
| Paustian, Keith | Professor                    | Bachelors, Forestry Sciences, Colorado State University, 1977  
|               |                              | Masters, Forestry Sciences, Colorado State University, 1980  
|               |                              | Doctorate, Ecology, SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES, 1987  |
| Payne, Sarah   | Assistant Professor          | Bachelors, History, General, Nebraska Wesleyan University, 1998  
|               |                              | Masters, American (United States) History, University of Wyoming, 2001  
|               |                              | Doctorate, American (United States) History, University of New Mexico, 2010  |
| Peairs, Frank  | Professor                    | Bachelors, Biology, General, ALLEGHENY COLL, 1971  
|               |                              | Masters, Entomology, UNIV OF MASS, 1974  
|               |                              | Doctorate, Entomology, CORNELL UNIV, 1977  |
| Pearce, Stephen| Assistant Professor          | Bachelors, University of Leeds, 2003  
|               |                              | Masters, University of Sussex, 2005  
|               |                              | Doctorate, Plant Sciences, General, University of Bristol, 2009  |
| Pearson, Calvin| Professor                    | Bachelors, Agronomy and Crop Science, BRIGHAM YOUNG U, 1978  
|               |                              | Masters, Agronomy and Crop Science, OKLAHOMA STATE, 1979  
|               |                              | Doctorate, Agronomy and Crop Science, OREGON STATE U, 1983  |
| Peccoud, Jean  | Professor                    | Masters, Univ of Paris Orsay, 1987  
|               |                              | Doctorate, Univ Joseph Foyser, 1991  |
| Pedros-Gascon, Antonio | Associate Professor | Bachelors, University of Coruna, 2002  
|               |                              | Doctorate, Ohio State University, 2007  
|               |                              | Masters, Ohio State University, 2007  |
| Peebles, Christie | Associate Professor      | Bachelors, Texas Tech University, 2002  
|               |                              | Doctorate, Rice University, 2008  |
| Peek, Lori     | Associate Professor          | Bachelors, Sociology, Ottawa University, 1997  
|               |                              | Masters, Educational Evaluation and Research, Colorado State University, 1999  
|               |                              | Doctorate, Sociology, University of Colorado-Boulder, 2005  |
| Peel, Jennifer | Professor                    | Bachelors, Biochemistry, The Pennsylvania State University, 1996  
|               |                              | Masters, Epidemiology, Emory University School of Public Health, 1998  
|               |                              | Doctorate, Epidemiology, Emory University, 2003  |
| Peel, Richard  | Associate Professor          | Bachelors, Animal Sciences, General, Angelo State University, 1987  
|               |                              | Masters, Animal Sciences, Other, Texas AM University, 1997  
|               |                              | Doctorate, Animal Sciences, Other, Texas AM University, 2000  |
| Peers, Graham  | Assistant Professor          | Bachelors, University of British Columbia, 1997  
|               |                              | Doctorate, McGill University, 2005  |
| Peersen, Olve  | Professor                    | Bachelors, Biological Sciences/Life Sciences, Other, Carnegie Mellon University, 1988  
|               |                              | Doctorate, Biophysics, Yale University, 1994  |
| Peila-Shuster, Jacqueline | Assistant Professor | Bachelors, Occupational Therapy, Colorado State University, 1991  
|               |                              | Masters, Education, General, Colorado State University, 2004  
<p>|               |                              | Doctorate, Counselor Education Counseling and Guidance Services, Colorado State University, 2011  |</p>
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<tr>
<th>Name</th>
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| Pena, Anita  | Associate Professor | Bachelors, The Johns Hopkins Univ, 2001  
Masters, Stanford Univ, 2004  
Doctorate, Stanford Univ, 2007 |
| Penny, Orly  | Instructor     | Bachelors, Psychology, General, University of Colorado at Colorado Springs, 1987  
Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2004 |
| Penttila, Timothy | Professor    | Bachelors, Mathematics, Other, University of Adelaide, 1982  
Doctorate, Mathematics, University of Oxford, 1986 |
| Perera, Rushika | Assistant Professor | Bachelors, Biology, General, Goshen College, 1995  
Bachelors, Chemistry, General, Goshen College, 1995  
Doctorate, Biological Sciences/Life Sciences, Other, Purdue University, 2002 |
| Perkins, Natalie | Instructor    | Masters, Colorado State University, 1997 |
| Perkins, Tracy | Instructor    | Bachelors, Rice University, 1987  
Masters, Univ of Colorado, 1992  
Doctorate, Univ of Wisconsin, 1997 |
| Perry, Anna   | Assistant Professor | Doctorate, Clothing/Apparel and Textile Studies, Iowa State University, 2014 |
| Perry, Gregory | Professor     | Bachelors, Agricultural Economics, Utah State University, 1981  
Masters, Agricultural Economics, Utah State University, 1982  
Doctorate, Agricultural Economics, Texas A M, 1986 |
| Peterson, Christopher | Professor | Bachelors, Mathematics, Haverford College, Haverford PA, 1985  
Masters, Mathematics, Duke University, 1989  
Doctorate, Mathematics, Duke University, 1994 |
| Peterson, Dianne | Instructor    | Bachelors, Biology, General, Lewis and Clark College, 1979  
Certificate, Non-Profit and Public Management, Metropolitan State College, 1983  
Doctorate, Juridical Science/Legal Specialization(LL.M.,M.C.L.,J.S.D., University of Denver College of Law, 1990 |
| Petro, John   | Instructor     | Bachelors, University of Wisconsin, Parkside, 1978  
Masters, University of Wisconsin, Madison, 1994  
Doctorate, Colorado State University, 2011 |
| Pezeshki, Ali | Associate Professor | Bachelors, Tehran University, 1999  
Masters, Tehran University, 2001  
Doctorate, C.S.U., 2004 |
| Phillips, Rebecca | Associate Professor | Bachelors, The Florida State University, 1995  
Masters, University of South Florida, 2001  
Doctorate, Louisiana State University, 2007 |
| Pickering, Kathleen | Professor    | Bachelors, History, General, College of William and Mary, 1980  
Professional, Law (LL.B., J.D.), New York University, 1984  
Doctorate, Anthropology, University of Wisconsin, 1996 |
| Pieplow, Sarah | Instructor     | Bachelors, Chemical Engin., Northeastern University, Boston, Ma., 2003  
| Pierce, Jeffrey | Associate Professor | Bachelors, Chemical Engin., Northeastern University, Boston, Ma., 2003  
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<tr>
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<td>Pierro, Evelyn</td>
<td>Instructor</td>
<td>Bachelors, English Language and Literature, General, Colorado State University, 1993&lt;br&gt;Masters, German Language and Literature, Colorado State University, 2000&lt;br&gt;Masters, Teaching English as a Second Language/Foreign Language, Colorado State University, 2000</td>
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<td>Pilgrim, Mary</td>
<td>Assistant Professor</td>
<td>Bachelors, Colorado State University, 2000&lt;br&gt;Masters, Mathematics, Colorado State University, 2003&lt;br&gt;Doctorate, Education, General, Colorado State University, 2010</td>
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<td>Pilon, Marinus</td>
<td>Professor</td>
<td>Bachelors, Biology, General, Utrecht University, 1987&lt;br&gt;Masters, Biology, General, Utrecht University, 1987&lt;br&gt;Doctorate, Molecular Biology, Utrecht University, 1992</td>
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<td>Pilon-Smits, Elizabeth</td>
<td>Professor</td>
<td>Masters, Utrecht University, 1987&lt;br&gt;Doctorate, Biology, General, Utrecht University, 1992</td>
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<td>Pinaud, Olivier</td>
<td>Associate Professor</td>
<td>Doctorate, Applied Mathematics, General, Universite Toulouse III, France, 2003&lt;br&gt;Doctorate, Applied Mathematics, General, Universite Lyon 1, France, 2010</td>
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<td>Pinedo, Pablo</td>
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<td>Professional, Veterinary Medicine (D.V.M.), University of Chile, 1993&lt;br&gt;Doctorate, University of Florida, 2008</td>
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<td>Pitcaithley, Sandra</td>
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<td>Bachelors, New Mexico State University, 1970&lt;br&gt;Bachelors, New Mexico State University, 1975&lt;br&gt;Masters, New Mexico State University, 1980&lt;br&gt;Bachelors, New Mexico State University, 1985&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1990</td>
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<td>Pitzulo, Carrie</td>
<td>Instructor</td>
<td>Bachelors, Colorado State University, 1970&lt;br&gt;Bachelors, New Mexico State University, 1975&lt;br&gt;Masters, New Mexico State University, 1980&lt;br&gt;Bachelors, New Mexico State University, 1985&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1990</td>
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<td>Plaisance, Patrick</td>
<td>Professor</td>
<td>Certificate, Mass Communications, Syracuse University, 2002</td>
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<td>Plastini, John</td>
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<td>Bachelors, Fine/Studio Arts, University of California, Santa Cruz, 2008&lt;br&gt;Masters, Printmaking, Tyler School of Art, 2012</td>
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<td>Plaza, Marizza</td>
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<td>Bachelors, University of Texas, 2001&lt;br&gt;Professional, J Ruben Clark Law School, 2004&lt;br&gt;Masters, University of Texas, 2012</td>
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<td>Podell, Brendan</td>
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<td>Bachelors, Microbiology/Bacteriology, Colorado State University, 2003&lt;br&gt;Doctorate, Veterinary Medicine (D.V.M.), Colorado State University, 2008&lt;br&gt;Certificate, Colorado State University, 2011&lt;br&gt;Doctorate, Pathology, Human and Animal, Colorado State University, 2014</td>
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<td>Poff, N</td>
<td>Professor</td>
<td>Bachelors, Biology, General, Hendrix College, 1978&lt;br&gt;Masters, Environmental Science/Studies, Indiana University, 1984&lt;br&gt;Doctorate, Biology, General, Colorado State University, 1989</td>
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<td>Pokatilova</td>
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<td>Powell, Cynthia</td>
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<td>Powers, Jaye</td>
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<td>Prasad, Ashok</td>
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<td>Prieto, Amy</td>
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<td>Prince, Eric</td>
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<td>Proctor, Jeremy</td>
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<td>Purdy, Andrea</td>
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<td>Puttlitz, Christian</td>
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<td>Qian, Yaling</td>
<td>Professor</td>
<td>Bachelors, Biology, General, Hangzhou Teacher's College, 1981</td>
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<td>Masters, Botany, General, Nanjing Agricultural University, 1988</td>
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<td>Quick, Donald</td>
<td>Assistant Professor</td>
<td>Doctorate, Education, General, Colorado State University, 2000</td>
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<td>Quijano, Louise</td>
<td>Associate Professor</td>
<td>Bachelors, Social Work, Nazareth College of Rochester, 1986</td>
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<td>Masters, Social Work, State University of NY at Buffalo, 1987</td>
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<td>Quillmann, Ursula</td>
<td>Assistant Professor</td>
<td>Associates, Mathematics, Gavilan Community College, 1988</td>
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<td>Masters, Geology, University of Colorado at Boulder, 2006</td>
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<td>Quimby, Jessica</td>
<td>Assistant Professor</td>
<td>Bachelors, University of Wisconsin Madison, 1997</td>
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<td>Quirk, Phillip</td>
<td>Assistant Professor</td>
<td>Bachelors, University Wisconsin Milwaukee, 1991</td>
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<td>Radford, Donald</td>
<td>Professor</td>
<td>Bachelors, Mechanical Engin., U BRITISH COLUM, 1980</td>
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<td>Masters, Metallurgical Engin., U BRITISH COLUM, 1982</td>
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<td>Radmore, Jaime</td>
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<td>Bachelors, Psychology, General, Doane College, 1998</td>
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<td>Raguet-Schofield, Melissa</td>
<td>Instructor</td>
<td>Doctorate, Anthropology, University of Illinois, 2010</td>
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<td>Raines, Karen</td>
<td>Assistant Professor</td>
<td>Masters, University of Texas at Arlington, 1985</td>
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<td>Rajopadhye, Sanjay</td>
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<td>Doctorate, Computer Science, University of Utah, 1986</td>
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<td>Ramchander, Sanjay</td>
<td>Professor</td>
<td>Bachelors, Nizam College, Osmania University, 1988</td>
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<td>Ramirez, Jorge</td>
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<td>Bachelors, Civil Engin., General, National Universidad de Columbia,</td>
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<td>Raadik Cottrell, Jana</td>
<td>Instructor</td>
<td>Bachelors, Art, General, Tallinn University, 1989</td>
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<td></td>
<td>Masters, Parks, Recreation and Leisure Studies, Wageningen University,</td>
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<td>Doctorate, Natural Resources Conservation, General, Colorado State</td>
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<td>Ramsdell, Howard</td>
<td>Associate Professor</td>
<td>Bachelors, Chemistry, General, POMONA COLLEGE, 1973</td>
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<td>Randall, David</td>
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<td>Randall, Elissa</td>
<td>Associate Professor</td>
<td>History,</td>
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<td>General, Univ. of North Carolina-Chapel Hill, 1993</td>
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<td>Rankin, Frederick</td>
<td>Professor</td>
<td>University of Florida, 1988</td>
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<td>Rao, Sangeeta</td>
<td>Assistant Professor</td>
<td>Veterinary Medicine (D.V.M.), ANGR Agricultural University, Hyderabad, India, 1994</td>
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<td>Rappe, Anthony</td>
<td>Professor</td>
<td>Chemistry,</td>
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<td>General, University of Puget Sound, 1974</td>
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<td>Rash, John</td>
<td>Professor</td>
<td>Zoology,</td>
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<td>General, UNIV OF TEXAS, 1965</td>
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<td>General, UNIV OF TEXAS, 1965</td>
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<td>Rashti, Roxanne</td>
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<td>Rathburn, Sara</td>
<td>Associate Professor</td>
<td>Geology,</td>
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<td>Colorado State University, 1985</td>
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<td>Rattenborg, Karen</td>
<td>Assistant Professor</td>
<td>Individual and Family Development Studies, General, Colorado State University, 1987</td>
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<td>Rattenborg, Karen</td>
<td>Assistant Professor</td>
<td>Individual and Family Development Studies, General, Colorado State University, 1987</td>
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<td>Rawlinson, Jennifer</td>
<td>Assistant Professor</td>
<td>Animal Sciences, General, Cornell University, 1995</td>
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<td>Ray, F Andrew</td>
<td>Associate Professor</td>
<td>Biology,</td>
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<td>Stetson University, 1976</td>
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<td>Ray, Indrajit</td>
<td>Professor</td>
<td>Information Sciences and Systems, George Mason University, 1997</td>
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<tr>
<td>Ray, Indrakshi</td>
<td>Professor</td>
<td>Biology; Medical</td>
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<td>Ray, Jane</td>
<td>Instructor</td>
<td>Social Sciences, General, Colorado State University, 1971</td>
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| Raymond, Abigail   | Instructor       | Bachelors, Sociology, BOWDOIN COLLEGE, 1981  
Masters, Social Sciences and History, Other, CORNELL UNIV, 1987  
Doctorate, Social Sciences and History, Other, CORNELL UNIV, 1993 |
| Raynolds, Laura    | Professor        | Bachelors, Sociology, BOWDOIN COLLEGE, 1981  
Masters, Social Sciences and History, Other, CORNELL UNIV, 1987  
Doctorate, Social Sciences and History, Other, CORNELL UNIV, 1993 |
| Reardon, Kenneth   | Professor        | Bachelors, Chemical Engin., UNIV OF PENN, 1981  
Masters, Chemical Engin., CALIF INST TECH, 1983  
Doctorate, Chemical Engin., CALIF INST TECH, 1987 |
| Reddy, Anreddy     | Professor        | Bachelors, Botany, General, NG COLLEGE, 1976  
Masters, Botany, General, KAKATIYA UNIV, 1979  
Doctorate, Molecular Biology, JAWAHARLAL NEHR, 1984 |
| Reding, Justin     | Instructor       | Bachelors, Colorado State University, 2004  
Masters, Colorado State University, 2009 |
| Redmond, Caroline  | Instructor       | Bachelors, English Creative Writing, Colorado State University, 2000  
Masters, Education Administration and Supervision, Other, University of Colorado - Colorado Springs, 2006 |
| Reed, Christopher  | Assistant Professor | Bachelors, Oklahoma State University, 2011  
Masters, Eastman School of Music, 2013 |
| Reeve, Andrea      | Instructor       | Masters, Curriculum and Instruction, Western Kentucky University, 1970  
Reid, Louann        | Professor        | Bachelors, English Language and Literature, General, LINFIELD COLLEGE, 1974  
Masters, English Teacher Education, WASHINGTON S U, 1977  
Doctorate, English Teacher Education, NEW YORK UNIV, 1991 |
| Reid, Robin        | Professor        | Bachelors, Zoology, General, Duke University, 1979  
Masters, Botany, General, University of Washington, 1983  
Doctorate, Range Science and Management, Colorado State University, 1992 |
| Reilly, Kristen    | Instructor       | Bachelors, Mechanical Engin., Cornell University, 1991  
Masters, Exercise Sciences/Physiology and Movement Studies, University of Texas, 1993  
Doctorate, Mechanical Engin., Colorado State University, 2000 |
| Reiser, Raoul      | Associate Professor | Bachelors, Mechanical Engin., Cornell University, 1991  
Masters, Exercise Sciences/Physiology and Movement Studies, University of Texas, 1993  
Doctorate, Mechanical Engin., Colorado State University, 2000 |
| Reisfeld, Bradley  | Associate Professor | Bachelors, Chemical Engin., University of California - Davis, 1984  
Masters, Chemical Engin., Pennsylvania State University, 1986  
Doctorate, Chemical Engin., Northwestern University, 1990 |
| Reising, Steven    | Professor        | Bachelors, Washington Univ in St. Louis, 1989  
Masters, Washington Univ in St. Louis, 1991  
Doctorate, Stanford University, 1998 |
| Reist, Noreen      | Professor        | Bachelors, Physiology, Human and Animal, Univ. of California at Berkeley, 1982  
Doctorate, Neuroscience, Stanford University, 1990 |
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<th>Name</th>
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| Rettig, Patricia | Associate Professor | Bachelors, English Language and Literature, General, Wittenberg University, 1996  
Master's, Library Science/Librarianship, University of Maryland, 1998 |
| Reuteman, Robert | Instructor       |                                                                           |
| Reynolds, Benjamin | Assistant Professor | Bachelors, Chemistry, General, Northern Arizona University, 1997  
Master's, Chemistry, General, Arizona State University, 1999 |
| Reynolds, Melissa | Associate Professor | Bachelors, Chemistry, General, Washington State University, 1997  
Doctorate, Chemistry, General, University of Michigan, 2004 |
| Reynolds, Stephen | Professor       | Bachelors, Carleton College, 1977  
Master's, University of Minnesota, 1983  
Doctorate, Environmental Health, University of Minnesota, 1991 |
| Rezende, Marlis | Associate Professor | Professional, Veterinary Medicine (D.V.M.), Universidade Federal Rural do Rio de Janeiro, 1996  
Master's, Veterinary Clinical Sciences (M.S., Ph.D.), Universidade Estadual Paulista-UNESP, 2000  
Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Universidade Estadual Paulista-UNESP, 2003 |
| Rhodes, Matthew | Associate Professor | Bachelors, Psychology, General, Francis Marion University, 1999  
Master's, Cognitive Psychology and Psycholinguistics, Florida State University, 2002  
Doctorate, Cognitive Psychology and Psycholinguistics, Florida State University, 2004 |
| Richards, Tracy | Assistant Professor | Bachelors, Psychology, General, Colorado State University, 1997  
Master's, Counseling Psychology, Colorado State University, 2001  
Doctorate, Counseling Psychology, Colorado State University, 2003 |
| Rickard, Kathryn | Associate Professor | Bachelors, Psychology, General, UNIV OF ALABAMA, 1979  
Master's, Psychology, General, UNIV OF GEORGIA, 1981  
Doctorate, Clinical Psychology, UNIV OF GEORGIA, 1983 |
| Rideout, Douglas | Professor       | Bachelors, Forestry, General, U OF WASHINGTON, 1974  
Master's, Forest Management, U OF WASHINGTON, 1975  
Doctorate, Forest Management, U OF WASHINGTON, 1982 |
| Rideout, Jacquelyn | Instructor     | Bachelors, Elementary Teacher Education, University of Northern Colorado, 1978 |
| Ridley, John | Associate Professor | Bachelors, Geology, Queen's College, Cambridge, U.K., 1978  
Doctorate, Geology, University of Edinburgh, U.K., 1982 |
| Riep, Amy | Instructor       | Bachelors, Social Work, Asbury University, 1999  
Master's, Social Work, University of Kentucky, 2005 |
| Riep, David | Assistant Professor | Bachelors, Communications, General, Asbury College, 1998  
Master's, Art History, Criticism and Conservation, University of Kentucky, 2005  
Professional, University of Iowa, 2011 |
| Riggs, Nathaniel | Associate Professor | Bachelors, University of Washington, 1996  
Master's, The Pennsylvania State University, 2001  
Doctorate, Penn State University, 2003 |
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| Risbeck, Philip    | Professor            | Bachelors, Graphic Design, Commercial Art and Illustration, UNIV OF KANSAS, 1962  
|                    |                      | Masters, Graphic Design, Commercial Art and Illustration, UNIV OF KANSAS, 1965 |
| Ritsema, Christina | Instructor           | Bachelors, Miami University, 1991  
|                    |                      | Masters, University of Arkansas, 1994  
|                    |                      | Doctorate, University of Arkansas, 2001                                    |
| Roberts, Jacob     | Professor            | Bachelors, Physics, General, University of Notre Dame, 1994  
|                    |                      | Doctorate, Optics, University of Colorado, 2001                           |
| Roberts, Michael   | Instructor           | Bachelors, English Language and Literature, General, Georgia College State University, 2000  
|                    |                      | Masters, Management Information Systems and Business Data Processing, Kennesaw State University, 2003  
|                    |                      | Doctorate, Business Administration and Management, General, Clemson University, 2009 |
| Robinson, Narda    | Assistant Professor  | Bachelors, Biology, General, Harvard/Radcliffe, 1982  
|                    |                      | Professional, Osteopathic Medicine (D.O.), Texas College of Osteopathic Medicine, 1988  
|                    |                      | Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1997 |
| Robinson, Raymond  | Associate Professor  | Bachelors, Physics, General, IDAHO STATE U, 1970  
|                    |                      | Masters, Physics, General, IDAHO STATE U, 1972  
|                    |                      | Doctorate, Physics, General, COLO STATE UNIV, 1979                       |
| Rocca, Jorge       | Professor            | Bachelors, Physics, General, U ROSARIO-ARGEN, 1978  
|                    |                      | Doctorate, Electrical, Electronics and Communication Engin., COLO STATE UNIV, 1983 |
| Rocca, Monique     | Associate Professor  | Bachelors, Biological Sciences/Life Sciences, Other, Stanford University, 1996  
|                    |                      | Professional, Ecology, Duke University, 2004                              |
| Rodenbush, James   | Instructor           | Doctorate, Univ. of Denver, 1993                                         |
| Rodgers, Timothy   | Instructor           | Bachelors, University of California Davis, 1976  
|                    |                      | Doctorate, University of California, Santa Cruz, 1982  
|                    |                      | Masters, University of Oregon, 1999                                      |
| Roehrig, John      | Professor            | Bachelors, Biology, General, U OF MISSOURI, 1978  
|                    |                      | Doctorate, Physiology, Human and Animal, ST LOUIS UNIV, 1982             |
| Roess, Deborah     | Professor            | Bachelors, Long Island University, 1996  
|                    |                      | Masters, Georgia State University, 2012                                   |
| Rogers, Jack       | Instructor           | Bachelors, Graphic Design, Commercial Art and Illustration, UNIV OF KANSAS, 1962  
<p>|                    |                      | Masters, Graphic Design, Commercial Art and Illustration, UNIV OF KANSAS, 1965 |</p>
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<td>Rojas, Don</td>
<td>Professor</td>
<td>Bachelors, Psychology, General, Colorado State University, 1990</td>
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<td>Rollin, James</td>
<td>Instructor</td>
<td>Bachelors, Philosophy, CITY COLL OF NY, 1964</td>
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<td>Rollin, Bernard</td>
<td>Professor</td>
<td>Masters, Yeshiva University, Ferkaf Graduate School, 1966</td>
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<td>Rollin, Linda</td>
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<td>Bachelors, City College of New York, 1964</td>
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<td>Roman-Muniz, Ivette</td>
<td>Associate Professor</td>
<td>Professional, Veterinary Medicine (D.V.M.), University of Wisconsin-Madison, 2001</td>
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<td>Ronayne, Michael</td>
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<td>Bachelors, Geological Sciences, Other, Ohio University, 1994</td>
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<td>Rosecrance, John</td>
<td>Professor</td>
<td>Bachelors, Physical Therapy, California State University, 1981</td>
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<td>Rosen, Lee</td>
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<td>Bachelors, Psychology, Other, U OF MINNESOTA, 1978</td>
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<td>Rosenberg, Corey</td>
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<td>Ross, Eric</td>
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<td>Bachelors, Biophysics, Yale University, 1996</td>
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<td>Ross, Kathryn</td>
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<td>Rosychuk, Rodney</td>
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<td>Professional, Veterinary Medicine (D.V.M.), W COL OF VET MD, 1974</td>
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<td>Rotner, Jaime</td>
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<td>Masters, Colorado State University, 2007</td>
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<td>Rovnak, Joel</td>
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<td>Bachelors, Colorado State University, 1982</td>
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<td>Rowe, Karen</td>
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<td>Bachelors, Business Teacher Education (Vocational), Colorado College (UNO), 1969</td>
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<td>Rowland, Christopher</td>
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<td>Rubino, Nick</td>
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<td>Bachelors, Sikkim Manidal University, 2006</td>
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| Ruch Gallie, Rebecca  | Assistant Professor | Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1999  
Masters, Epidemiology, Colorado State University, 2002 |
| Rudroff, Thorsten     | Assistant Professor | Bachelors, Exercise Sciences/Physiology and Movement Studies, University of Colorado, 1986  
Masters, Exercise Sciences/Physiology and Movement Studies, University of Constance, Germany, 1989  
Masters, Physical Therapy, German Association of Sport Therapy, 1997  
Professional, Exercise Sciences/Physiology and Movement Studies, German Sports University, 2001 |
| Ryan, Patricia        | Associate Professor | Doctorate, University of South Florida, 1995 |
| Ryder, Candace        | Instructor        | Bachelors, Business Administration and Management, General, Colorado State University, 1998 |
| Sabbath, Karyl        | Assistant Professor | Bachelors, Bowling Green State University, 1979  
Masters, Northern Arizona University, 1982  
Doctorate, Ohio University, 1988 |
| Safadi-Chamberlain, Farida | Instructor | Bachelors, Animal Sciences, General, University of Jordan, 1977  
Masters, Plant Sciences, General, University of Jordan, 1983  
Doctorate, Horticulture Science, Colorado State University, 1992 |
| Ruff, Colin           | Instructor        | Bachelors, University of Puerto Rico-Mayaguez, 1986  
Masters, University of Florida, 1988  
Doctorate, University of Florida, 1993 |
| Ruiz, Jaime           | Assistant Professor | Bachelors, Psychology, General, University of California at Davis, 1999  
Masters, Computer Science, San Francisco State, 2005  
Doctorate, Computer Science, University of Waterloo, 2012 |
| Rutledge, Steven      | Professor         | Bachelors, Physics, General, UNIV OF MISSOURI, 1978  
Doctorate, Atmospheric Sciences and Meteorology, UNIV OF WASH, 1983 |
| Ryan, Ajean           | Associate Professor | Bachelors, Painting, University of California at Los Angeles, 1993  
Masters, Sculpture, University of California at Berkeley, 2000 |
| Ryan, Elizabeth       | Associate Professor | Bachelors, Bowling Green State University, 1996  
Masters, University of Rochester, School of Medicine Dentistry, 2003  
Doctorate, University of Rochester, 2006 |
| Sale, Thomas          | Associate Professor | Bachelors, Chemistry, General, MIAMI UNIV, 1980  
Masters, Water Quality and Wastewater Treatment Tech./Technician, UNIV OF AZ, 1985  
Doctorate, Agricultural Engin., CSU, 1998 |
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<td>Salman, M D</td>
<td>Professor</td>
<td>Bachelors, Veterinary Medicine (D.V.M.), U OF BAGHDAD, 1973 Masters, Biological Sciences/Life Sciences, Other, U OF CALIFORNIA, 1980 Doctorate, Pathology, Human and Animal, U OF CALIFORNIA, 1983</td>
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<td>Samelson, Donald</td>
<td>Associate Professor</td>
<td>Bachelors, Macalester College, 1973 Masters, University of Wisconsin, 1975 Doctorate, Virginia Tech, 1992</td>
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<td>Sampath, Walajabad</td>
<td>Professor</td>
<td>Bachelors, Mechanical Engin., INDIAN INST TEC, 1980 Masters, Mechanical Engin., AZ STATE UNIV, 1982 Doctorate, Mechanical Engin., AZ STATE UNIV, 1985</td>
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<td>Sample, Pat</td>
<td>Professor</td>
<td>Bachelors, Secondary Teacher Education, UNIV OF WYOMING, 1978 Masters, Theological Studies and Religious Vocations, Other, LUTHER NW T SEM, 1983 Doctorate, Education, Other, Colorado State University, 1995</td>
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<td>Sampson, David</td>
<td>Associate Professor</td>
<td>Bachelors, Biology, General, BOWDOIN COLL, 1972 Masters, Biochemistry, U CONNECTICUT, 1975 Doctorate, Biochemistry, COLO STATE UNIV, 1982</td>
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<td>Sandelin, Theresa</td>
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<td>Sanders, Thomas</td>
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<td>Bachelors, Elementary Teacher Education, Western State College, 1981</td>
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<td>Sanford, William</td>
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<td>Santangelo, Kelly</td>
<td>Assistant Professor</td>
<td>Bachelors, Biology, General, Rochester Institute of Technology, 2000 Professional, Veterinary Medicine (D.V.M.), Cornell University, 2004 Doctorate, Veterinary Clinical Sciences (M.S., Ph.D.), Ohio State University, 2011</td>
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<td>Bachelors, US Air Force Academy, 1974 Doctorate, University of Colorado Masters, Ohio State University</td>
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<td>Professional, Veterinary Medicine (D.V.M.), University of Montreal, 1992 Masters, Veterinary Clinical Sciences (M.S., Ph.D.), Washington State University, 1998</td>
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<td>Seitz, Deanne</td>
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<td>Associates, Front Range Community College, 1985 Bachelors, Arizona State University, 1992</td>
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<td>Seshadri, Arathi</td>
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<td>Bachelors, Horticulture Science, University of Agricultural Sciences, 1988 Masters, Genetics, Plant and Animal, University of Agricultural Sciences, 1991 Doctorate, Ecology, Indian Institute of Science, 1997</td>
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<td>Shackelford, Charles</td>
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<td>Bachelors, Civil Engin., General, University of Missouri Rolla, 1980 Masters, Geotechnical Engin., UNIV OF TEXAS, 1983 Doctorate, Geotechnical Engin., UNIV OF TEXAS, 1988</td>
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<td>Shafer, Jason</td>
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<td>Shahba, Mohamed</td>
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<td>Bachelors, Botany, General, Tanta University, 1987 Masters, Ecology, Cairo University, 1994 Doctorate, Plant Physiology, Colorado State University, 2002</td>
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<td>Sharpe, Angela</td>
<td>Instructor</td>
<td>Bachelors, Environmental Control Technol./Technicians, Other, Saint Cloud State University, 2002 Bachelors, Spanish Language and Literature, Colorado State University, 2013</td>
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<td>Sharvelle, Sybil</td>
<td>Associate Professor</td>
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<td>Shaw, Jane</td>
<td>Associate Professor</td>
<td>Bachelors, Animal Sciences, General, Cornell University, 1990 Professional, Veterinary Medicine (D.V.M.), Michigan State University, 1994 Doctorate, Epidemiology, University of Guelph, 2004</td>
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<td>Shaw, Joy</td>
<td>Instructor</td>
<td>Bachelors, Speech Teacher Education, University of Illinois, 1980 Masters, Communications, General, Colorado State University, 1985</td>
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<td>Shefflin, Douglas</td>
<td>Instructor</td>
<td>Bachelors, University of Wisconsin-Madison, Madison, WI, 1999 Doctorate, University of Colorado at Boulder, CO, 2012</td>
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<td>Shelstad, Mark</td>
<td>Associate Professor</td>
<td>Bachelors, Social Studies Teacher Education, Minnesota, 1990 Masters, Public/ Applied History and Archival Administration, Wisconsin Milwaukee, 1992</td>
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<td>Sheriff, Anne</td>
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<td>Bachelors, Social Studies Teacher Education, Minnesota, 1990 Masters, Public/ Applied History and Archival Administration, Wisconsin Milwaukee, 1992</td>
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<td>Shi, Yian</td>
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<td>Bachelors, Nanjing University, 1983 Masters, Chemistry, General, University of Toronto, 1987 Doctorate, Chemistry, General, Stanford University, 1992</td>
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<td>Shields, Bruce</td>
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<td>Bachelors, Pittsburg State University Masters, Colorado State University Masters, Pittsburg State University</td>
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Masters, The Pennsylvania State University, 1991  
Doctorate, Agricultural Economics, University of Wisconsin, 1998 |
| Shillington, Audrey | Professor | Bachelors, Psychology, General, Drury College, 1982  
Masters, Educational Evaluation and Research, Washington University, St. Louis MO, 1987  
Doctorate, Social Work, Washington University, St. Louis MO, 1991  
Masters, Educational Psychology, Washington University, St. Louis, MO, 1993 |
| Shimon, Neil    | Instructor        | Bachelors, Chemistry, General, University of Northern Colorado, 2001  
Masters, Biochemistry, Colorado State University, 2003  
Doctorate, Biochemistry, Colorado State University, 2006 |
| Shipman, Patrick | Associate Professor | Bachelors, Linguistics, University of Arizona, 1999  
Bachelors, Mathematics, University of Arizona, 1999  
Doctorate, Mathematics, University of Arizona, 2004 |
| Sholders, Aaron | Instructor        | Bachelors, Chemistry, General, University of Northern Colorado, 2001  
Masters, Biochemistry, Colorado State University, 2003  
Doctorate, Biochemistry, Colorado State University, 2006 |
| Shomaker, Lauren | Assistant Professor | Bachelors, University of Virginia, 2001  
Masters, University of Denver, 2004  
Doctorate, University of Denver, 2007 |
| Shonkwiler, Clayton | Assistant Professor | Bachelors, Mathematics, Sewanee: The University of the South, 2003  
Doctorate, Mathematics, University of Pennsylvania, 2009 |
| Shore, Lynn     | Professor         | Bachelors, Psychology, General, University of Oregon, 1977  
Masters, Industrial and Organizational Psychology, Colorado State University, 1983  
Doctorate, Industrial and Organizational Psychology, Colorado State University, 1988 |
| Shores, Matthew | Associate Professor | Bachelors, Gustavus Adolphus College, 1997  
Doctorate, Chemistry, General, University of California Berkeley, 2002 |
| Shuey, Mark     | Instructor        | Masters, University of Northern Colorado, 2013 |
| Shuler, Scott   | Associate Professor | Bachelors, Purdue Univ, 1974  
Masters, Purdue Univ, 1977  
Doctorate, Civil Engin., General, Texas AM, 1985 |
| Shulman, Steven | Professor         | Bachelors, Economics, General, UNIV OF MASS, 1977  
Masters, Economics, General, UNIV OF MASS, 1979  
Doctorate, Economics, General, UNIV OF MASS, 1984 |
| Shuster, William | Instructor        | Bachelors, History, General, Colorado State University, 1987  
Masters, Business Communications, University of Northern Colorado, 1992  
Masters, Business Administration and Management, General, Colorado State University, 2000 |
| Shutters, Patricia | Assistant Professor | Bachelors, University of Virginia, 1995  
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<td>Bachelors, Dance, COLO STATE UNIV, 1983</td>
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<td>Associate Professor</td>
<td>Bachelors, Psychology, General, Macalester College, 1988 Masters, Counseling Psychology, University of Oregon, 1997 Doctorate, Counseling Psychology, University of Minnesota, 2005</td>
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<td>Assistant Professor</td>
<td>Doctorate, Epidemiology, Colorado State University, 2009 Masters, Public Health, General, Iowa State University Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1984 Masters, Anatomy, Colorado State University, 1987</td>
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<td>Assistant Professor</td>
<td>Bachelors, Mathematics, Washington University in Saint Louis, 1997 Doctorate, Biochemistry, University of Minnesota, 2009</td>
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<td>Stevenson, Cerissa</td>
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<td>Bachelors, Sociology, Miami University (Oxford, OH), 1981 Masters, European History, University of Cincinnati, 1997 Doctorate, European History, University of Colorado Boulder, 2005</td>
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<td>Stevis, Dimitris</td>
<td>Professor</td>
<td>Bachelors, Political Science, General, DEPAUW UNIV, 1977 Masters, Political Science, General, U OF ARIZONA, 1983 Doctorate, Political Science, General, U OF ARIZONA, 1987</td>
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<td>Steward, Lawrence</td>
<td>Instructor</td>
<td>Bachelors, Journalism, COLO STATE UNIV, 1973 Masters, University of Colorado, 1989</td>
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<td>Stewart, Jane</td>
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<td>Masters, Forestry, General, University of Vermont, 2003 Doctorate, Plant Pathology, Washington State University, 2011</td>
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<td>Bachelors, Biological Sciences/Life Sciences, Other, COLO STATE UNIV, 1980 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1984 Masters, Anatomy, Colorado State University, 1987</td>
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<td>Stone, Martha</td>
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<td>Bachelors, Home Economics Teacher Education (Vocational), U OF TENNESSEE, 1974 Masters, Foods and Nutrition Studies, Other, U OF TENNESSEE, 1975 Doctorate, Foods and Nutrition Studies, Other, U OF TENNESSEE, 1977</td>
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<td>Bachelors, Middlebury College, 1982&lt;br&gt;Professional, Boston College Law School, 1988</td>
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<td>Bachelors, Microbiology/Bacteriology, Iowa State University, 1967&lt;br&gt;Masters, Counseling Psychology, Iowa State University, 1969&lt;br&gt;Doctorate, Educational Evaluation, Research and Statistics, Other, Iowa State University, 1975</td>
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<td>Bachelors, Chemistry, General, FRANKLIN MARS, 1973&lt;br&gt;Masters, Chemistry, General, Northwestern University, 1976&lt;br&gt;Doctorate, Inorganic Chemistry, Northwestern University, 1978</td>
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<td>Bachelors, Civil Engin., General, Iowa State University, 1980&lt;br&gt;Masters, Business Administration and Management, General, St. Thomas University, 1988&lt;br&gt;Doctorate, Business Administration and Management, General, University of Colorado, 1992</td>
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<td>Bachelors, Occupational Therapy, UNIV OF KANSAS, 1976&lt;br&gt;Masters, Occupational Therapy, COLO STATE UNIV, 1987</td>
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<td>Doctorate, Biological Immunology, Carnegie Mellon University, 1990</td>
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<td>Temirbekov, Sayat</td>
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<td>Associates, Institute of Botany, Kazakhstan, 1990</td>
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Colorado State University
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<th>Bachelors, Aerospace, Aeronautical and Astronautical Engin., CU BOULDER, 1994</th>
<th>Masters, Atmospheric Sciences and Meteorology, UNIV WA, 1998</th>
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<td>Bachelors, Philosophy, Colorado State University, 2006</td>
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<td>Doctorate, Medical Nutrition, Rutgers University, 1975</td>
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<td>Thornton, Christopher</td>
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<td>Bachelors, Psychology, General, Tulane University, 1978</td>
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<td>Toki, Walter</td>
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<td>Certificate, Physics, General, U OF CALIFORNIA, 1973</td>
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<td>Tompkins, Sara</td>
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<td>Tornatzky, Cyane</td>
<td>Associate Professor</td>
<td>Bachelors, Philosophy, College of Wooster, 1988</td>
<td>Masters, Education, General, San Francisco State University, 1997</td>
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<td>Bachelors, Angelo State University, 2009</td>
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<td>Assistant Professor</td>
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| Tracy, Brian         | Associate Professor | Bachelors, Colorado State University, 1988  
Masters, Colorado State University, 1991  
Doctorate, University of Maryland, 1998 |
| Traub-Dargatz, Josie | Professor           | Professional, Veterinary Medicine (D.V.M.), U OF ILLINOIS, 1977  
Masters, Veterinary Clinical Sciences (M.S., Ph.D.), WASHINGTON ST U, 1982 |
| Trehus, Rebecca      | Instructor          | Bachelors, Colorado State University, 2013  
Bachelors, Colorado State University, 2013 |
| Trembath, Paul       | Associate Professor | Bachelors, Comparative Literature, U OF WISCONSIN, 1980  
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Doctorate, English Language and Literature, General, U OF VIRGINIA, 1990 |
| Tropman, Elizabeth   | Associate Professor | Bachelors, Philosophy, The Ohio State University, 1998  
Doctorate, Philosophy, Indiana University, Bloomington, 2006 |
| Troup, Lucy          | Assistant Professor | Doctorate, University of Plymout, 1995 |
| Trout, Brian         | Instructor          | Bachelors, Colorado State University, 1977  
Masters, Colorado State University, 1990 |
| Troxell, Wade        | Associate Professor | Bachelors, Engin. Science, COLO STATE UNIV, 1980  
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Doctorate, Mechanical Engin., COLO STATE UNIV, 1987 |
| Truitt, Laura        | Instructor          | Bachelors, Painting, Goucher College, 2002  
Masters, Painting, Colorado State University, 2012 |
| Trumbo, Craig        | Professor           | Bachelors, Journalism, Iowa State University, 1984  
Masters, Journalism, Iowa State University, 1993  
Doctorate, Mass Communications, University of Wisconsin, 1997 |
| Truslow, Matthew     | Instructor          | Bachelors, Iowa State University, 2004  
Masters, Texas Tech University, 2006  
Doctorate, Texas Tech University, 2013 |
| Tsai, Chin-Hsun      | Assistant Professor | Bachelors, Iowa State University, 2004  
Masters, Texas Tech University, 2006  
Doctorate, Texas Tech University, 2013 |
| Tsai, Su-Jung        | Assistant Professor | Bachelors, Taunghai University, Taiwan, 1993  
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| Tsunoda, Susan       | Professor           | Bachelors, Molecular Biology, University of California, San Diego, 1990  
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| Tucker, Dustin       | Assistant Professor | Bachelors, Philosophy, University of Washington, 2003  
Doctorate, Philosophy, University of Michigan, 2011 |
| Tucker, Ruth         | Instructor          | Bachelors, Carleton College, 1992  
Doctorate, SUNY Stony Brook, 1997 |
<p>| Turk, Daniel         | Associate Professor | Doctorate, Business Administration and Management, Other, Georgia State University, 1999 |</p>
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<td>van de Lindt, John</td>
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<td>Professional, Veterinary Medicine (D.V.M.), Cornell, 1986</td>
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<td>Bachelors, Chemistry, General, Brigham Young University, 1990, Doctorate, Chemistry, General, University of California, Berkeley, 1996</td>
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<td>Bachelors, Univ. of Delhi, 1986, Masters, Jawaharlal Nehru Univ, 1988, Masters, Jawaharlal Nehru Univ, 1990, Doctorate, The New School for Social Research, NY, 2006</td>
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<td>Velasco, Marcela</td>
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<td>Bachelors, Sociology, University of Massachusetts, 1993, Masters, Latin American Studies, New York University, 1995, Doctorate, Political Science, General, Boston University, 2007</td>
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<td>Velazquez-Castillo, Maura</td>
<td>Professor</td>
<td>Bachelors, Comparative Literature, National University of Paraguay, 1981, Masters, Linguistics, University of Kansas, 1986, Doctorate, Linguistics, University of California San Diego, 1993</td>
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<td>Bachelors, Theology/Theological Studies, Bethany University, 2003&lt;br&gt;Masters, Speech and Rhetorical Studies, Colorado State University, 2007</td>
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<td>Venable, Esther</td>
<td>Instructor</td>
<td>Bachelors, English Language and Literature, General, University of Salamanca, Spain, 1992&lt;br&gt;Bachelors, Art History, Criticism and Conservation, University of Salamanca, Spain, 1997&lt;br&gt;Masters, Spanish Language and Literature, Colorado State University, 2002</td>
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<td>Venayagamoorthy, Subhas</td>
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<td>Bachelors, Univ of Natal, Durban, South Africa, 2000&lt;br&gt;Masters, University of Natal, Durban, South Africa, 2002&lt;br&gt;Doctorate, Stanford University, 2007</td>
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<td>Vermeulen, Bert</td>
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<td>Bachelors, Massachusetts Inst of Tech, 1981&lt;br&gt;Masters, Massachusetts Inst of Tech, 1981&lt;br&gt;Masters, Stanford University, 1985</td>
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<td>Vernon, Irene</td>
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<td>Vigh, Jozsef</td>
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<td>Bachelors, French Language and Literature, Oberlin College, 1989&lt;br&gt;Masters, French Language and Literature, Indiana University, 1991&lt;br&gt;Doctorate, French Language and Literature, Indiana University, 1998</td>
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<td>Volbrecht, Vicki</td>
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<td>Bachelors, Psychology, General, U OF WISCONSIN, 1979&lt;br&gt;Masters, Psychology, General, U OF COLORADO, 1984&lt;br&gt;Doctorate, Psychology, General, U OF COLORADO, 1988</td>
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<td>Volckens, John</td>
<td>Professor</td>
<td>Bachelors, Civil Engin., Other, University of Vermont, 1996 Masters, Environmental/Environmental Health Engin., University of North Carolina Chapel Hill, 1999 Doctorate, Environmental/Environmental Health Engin., University of North Carolina Chapel Hill, 2003</td>
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<td>von Fischer, Joseph</td>
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<td>Bachelors, Biology, General, Augustana Coll, Sioux Falls, SD, 1992 Doctorate, Ecology, Cornell University, 2002</td>
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<td>Voss, Jacqueline</td>
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<td>Doctorate, Clinical Psychology, Southern Illinois University, 1978</td>
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<td>Wagner, Alyssa</td>
<td>Instructor</td>
<td>Bachelors, Colorado State University, 2013</td>
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<td>Wagner, John</td>
<td>Professor</td>
<td>Bachelors, Michigan State University, 1980 Masters, Agricultural business and Management, Other, Oklahoma State University, 1982 Doctorate, Oklahoma State University, 1985</td>
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<td>Wakefield, Russell</td>
<td>Instructor</td>
<td>Masters, Colorado State University, 2009</td>
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<td>Walker, Aimee</td>
<td>Assistant Professor</td>
<td>Masters, Colorado State University, 2009</td>
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<td>Walker, Debra</td>
<td>Instructor</td>
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<td>Wallenstein, Matthew</td>
<td>Associate Professor</td>
<td>Bachelors, Geographical Sciences, Other, Franklin and Marshall College, 1996 Doctorate, Ecology, Duke University, 2004</td>
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<td>Wallner, Barbara</td>
<td>Assistant Professor</td>
<td>Bachelors, Biology, General, Iowa State University, 1972 Masters, Higher Education Administration, The Pennsylvania State University, 1991 Doctorate, Higher Education Administration, The Pennsylvania State University, 1998</td>
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<td>Wallner, Stephen</td>
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<td>Bachelors, Biology, General, South Dakota State University, 1967 Masters, Botany, Other, South Dakota State University, 1969 Doctorate, Plant Physiology, Iowa State University, 1973</td>
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<td>Walrond, John</td>
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<td>Bachelors, Zoology, General, OHIO UNIV, 1971 Doctorate, Neuroscience, UNIV WISCONSIN, 1979</td>
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<td>Wang, Jeff</td>
<td>Instructor</td>
<td>Doctorate, University of Rochester, 1997</td>
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<td>Wang, Qiang</td>
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<td>Bachelors, Tsinghua University, 1993 Doctorate, Univ of Wisconsin, 2002</td>
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<td>Ward, Sarah</td>
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<td>Bachelors, Plant Sciences, Other, U OF LONDON, 1980 Masters, Science Teacher Education, General, E CAROLINA U, 1988 Doctorate, Plant Breeding and Genetics, COLORADO STATE UNIVERSITY, 1994</td>
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<td>Bachelors, Psychology, General, Colorado State University, 1984 Masters, Psychology, General, Colorado State University, 1988 Doctorate, Psychology, General, Colorado State University, 1992</td>
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<td>Waters, Sean</td>
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<td>Bachelors, Chemical Engin., UNIV TEXAS-Austin, 1975 Doctorate, Chemical Engin., CAL INST TECH, 1980</td>
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<td>Wdowik, Melissa</td>
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<td>Wedding, Sarah</td>
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<td>Wei, Yu</td>
<td>Associate Professor</td>
<td>Bachelors, Hebei Forest College, 1994 Doctorate, University of Minnesota, 2004 Masters, University of Minnesota, 2004</td>
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<td>Weil, Michael</td>
<td>Professor</td>
<td>Bachelors, Microbiology/Bacteriology, Louisiana State University, 1975 Doctorate, Microbiology/Bacteriology, University of Texas, 1987</td>
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<td>Weiler, Stephan</td>
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<td>Masters, Stanford, 1988 Doctorate, University of California, 1994</td>
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<td>Weinberg, Andrea</td>
<td>Assistant Professor</td>
<td>Bachelors, Accounting, west Texas AM, 1998 Certificate, Special Education, General, Texas AM University, 1999 Masters, Educational Evaluation and Research, Colorado State University, 2006 Doctorate, Educational Evaluation and Research, Colorado State University, 2013</td>
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<td>Weir, Heather</td>
<td>Assistant Professor</td>
<td>Bachelors, Biological and Physical Sciences, Colorado State University, 1991 Bachelors, Equestrian/Equine Studies, Horse Management and Training, Colorado State University, 1991 Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1995</td>
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<td>Name</td>
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<td>Tiffany Weir</td>
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<td>Alyson Welker</td>
<td>Instructor</td>
<td>University of Colorado Denver</td>
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<tr>
<td>Theresa Wernimont</td>
<td>Instructor</td>
<td>Regis University - Denver, 2010</td>
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<tr>
<td>Kelly West</td>
<td>Instructor</td>
<td>University of Colorado Denver</td>
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<tr>
<td>Philip Westra</td>
<td>Professor</td>
<td>Bachelors, Philosophy, U OF CALIFORNIA, 1971</td>
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<td>Lawrence Whalen</td>
<td>Professor</td>
<td>Chemistry, General, U OF CALIFORNIA, 1972</td>
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<tr>
<td>Richard Wheeler</td>
<td>Instructor</td>
<td>Carroll College, 1995</td>
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<tr>
<td>Allison White</td>
<td>Instructor</td>
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<td>Sally Whitney</td>
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<td>Shawn Whitney</td>
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<td>Claudia Wiese</td>
<td>Assistant Professor</td>
<td>Biology, General, Technical University, Darmstadt, Germany, 1986</td>
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<td>Franziska Wilcox</td>
<td>Instructor</td>
<td>German Language and Literature, Colorado State University, 2003</td>
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<td>Jeffrey Wilcox</td>
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<td>Michelle Wilde</td>
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<td>Jeffrey Wilkes</td>
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<td>Tyler Will</td>
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<td>Philosophy, Colorado State University, 2015</td>
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<td>Elizabeth Williams</td>
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<td>Alma College, 2001</td>
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<td>John Williams</td>
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<td>Bachelors, Chemistry, General, Syracuse University, 1975</td>
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<td>Willis, Danielle</td>
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<td>Wineman, Tracey</td>
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<td>Witt, Jessica</td>
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| Wittemyer, George | Associate Professor | Bachelors, Biology, General, Colorado College, 1997  
Doctorate, Environmental Science/Studies, University of California at Berkeley, 2005 |  
| Wittenburg, Luke | Assistant Professor | Professional, Veterinary Medicine (D.V.M.), Colorado State University, 2004 |  
| Woerner, Dale     | Associate Professor | Bachelors, Animal Sciences, Other, Texas Tech University, 2003  
Masters, Animal Sciences, Other, Texas Tech University, 2005  
Doctorate, Animal Sciences, Other, Colorado State University, 2009 |  
| Wohl, Ellen       | Professor           | Bachelors, Geology, ARIZONA STATE U, 1984  
Doctorate, Geological Sciences, Other, UNIV OF ARIZONA, 1988 |  
| Wolff, Tamara     | Instructor          | Bachelors, English Teacher Education, Colorado State University, 1998  
Certificate, Secondary Teacher Education, Colorado State University, 1998  
Masters, English Teacher Education, Colorado State University, 2010 |  
| Wood, Wendy       | Professor           | Bachelors, Tufts University, 1975  
Masters, University of Southern California, 1988  
Doctorate, University of Southern California, 1995 |  
Masters, University of Nebraska, 1974  
Certificate, Defense Acquisition University, 1985  
Masters, University of Denver  
Masters, University of Nebraska |  
| Woodman, Tyler    | Instructor          | |  
| Work, Robert      | Instructor          | Bachelors, Fine/Studio Arts, Colorado State University, 1995  
Masters, Fine/Studio Arts, Colorado State University, 1999 |  
| Worley, Deanna    | Associate Professor | Bachelors, Biological Sciences/Life Sciences, Other, Montana State University, 1995  
Professional, Veterinary Medicine (D.V.M.), Colorado State University, 1999 |  
| Wrenn, Corey      | Instructor          | Bachelors, Virginia Polytechnic Inst. State Univ, 2005  
Masters, Virginia Polytechnic Inst. State Univ, 2008 |  
| Wright, Amanda    | Instructor          | Masters, Communications, General, Colorado State University, 2004 |  
| Wright, Grace     | Instructor          | Bachelors, University of Vermont  
Masters, Eastern Washington University  
Masters, Marquette University |  
| Wu, Mingzhong     | Associate Professor | Bachelors, Physics, General, Huazhong University of Science Technology, 1991  
Bachelors, Theoretical and Mathematical Physics, Huazhong University of Science and Technology, 1991  
Masters, Physics, General, Huazhong University of Science Technology, 1996  
Masters, Theoretical and Mathematical Physics, Huazhong University of Science and Technology, 1996  
Doctorate, Physics, General, Huazhong University of Science Technology, 1999  
Doctorate, Theoretical and Mathematical Physics, Huazhong University of Science and Technology, 1999 |
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<td>Xiang, Hongyan</td>
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<td>Xiong, Lina</td>
<td>Assistant Professor</td>
<td>Travel-Tourism Management, Jinan University, China, 2006</td>
<td>Hospitality/Management, University of Delaware, 2008</td>
<td>Business Administration and Management, General, Temple University, 2014</td>
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<td>Yalen, Deborah</td>
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<td>English Language and Literature, General, Columbia College, 1989</td>
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<td>Yalin, Azer</td>
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<td>QUEEN'S UNIV, 1995</td>
<td>PRINCETON UNIV, 1997</td>
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<td>Yan, Ruoh-Nan</td>
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<td>Journalism, National Chengchi University, 1993</td>
<td>General Retailing Operations, University of Arizona, 2001</td>
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<td>Yang, Hua</td>
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<td>Food Sciences and Tech, Sichuan University of Science and Technology, 1996</td>
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<td>Biochemistry, Wuhan University, 1996</td>
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<td>Yelinek, Kristina</td>
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<td>Young, Peter</td>
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<td>University of Oregon, 1984</td>
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<td>Youngblade, Lise</td>
<td>Professor</td>
<td>Bachelors, Pre-Elementary/Early Childhood/Kindergarten Teacher Education, University of Texas Austin, 2001</td>
<td>Masters, Texas A M Health Science Center, 2003</td>
<td>Doctorate, Social Work, University of Texas Austin, 2014</td>
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<td>Yuma, Paula</td>
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<td>Pre-Elementary/Early Childhood/Kindergarten Teacher Education, University of Texas Austin, 2001</td>
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<td>Zabel, Mark</td>
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<td>Bachelors, Loyola University of Chicago, 1990&lt;br&gt;Bachelors, Southern Illinois University, 1995&lt;br&gt;Doctorate, University of Utah, 2001</td>
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<td>Zahran, Sammy</td>
<td>Associate Professor</td>
<td>Bachelors, Political Science, General, University of Windsor, 1995&lt;br&gt;Doctorate, Sociology, University of Tennessee, 2003</td>
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<td>Zekas, Lisa</td>
<td>Associate Professor</td>
<td>Bachelors, Biological Sciences/Life Sciences, Other, California State University - Sacramento, 1986&lt;br&gt;Professional, Veterinary Medicine (D.V.M.), University of California - Davis, 1994</td>
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<td>Zeller, Shannon</td>
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<td>Zhao, Jianguo</td>
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<td>Bachelors, Harbin Institute of Technology, 2005&lt;br&gt;Masters, Harbin Institute of Technology, 2007&lt;br&gt;Doctorate, Michigan State University, 2015</td>
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<td>Doctorate, Applied Mathematics, General, Iowa State University, 2010&lt;br&gt;Doctorate, Mathematical Statistics, Iowa State University, 2014</td>
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<td>Zhou, Yongcheng</td>
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<td>Bachelors, Mechanical Engin., Northwestern Polytechnical University, 1996&lt;br&gt;Masters, Mechanical Engin., China Academy of Launch Vehicle Technology, 1999&lt;br&gt;Doctorate, Applied Mathematics, General, Michigan State University, 2006</td>
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<td>Bachelors, Computer Science, University of Iowa, 2003&lt;br&gt;Masters, Library Science, Other, University of Iowa, 2004</td>
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<td>Zimmerman, Donald</td>
<td>Instructor</td>
<td>Bachelors, Biology, General, KANSAS STATE U, 1966&lt;br&gt;Masters, Journalism, KANSAS STATE U, 1968&lt;br&gt;Doctorate, Mass Communications, U OF WISCONSIN, 1977</td>
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<td>Zimmerman, Donald</td>
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<td>Bachelors, Biology, General, KANSAS STATE U, 1966&lt;br&gt;Masters, Journalism, KANSAS STATE U, 1968&lt;br&gt;Doctorate, Mass Communications, U OF WISCONSIN, 1977</td>
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<td>Zimmerman, Toni</td>
<td>Professor</td>
<td>Bachelors, Psychology, General, OHIO UNIVERSITY, 1984&lt;br&gt;Masters, Clinical Psychology, RADFORD UNIV, 1985&lt;br&gt;Doctorate, Family and Marriage Counseling, VIRGINIA POLY U, 1991</td>
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<td>Zwick-Tapley, Sarah</td>
<td>Instructor</td>
<td>Bachelors, Illinois State University, 1991&lt;br&gt;Masters, Harvard University/Moscow Art Theatre, 1999</td>
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KEY TO COURSES

The University reserves the right to change courses in this section without notice. There is no assurance that a given course will be offered in complete accordance with the catalog listing.

Key to Courses of Instruction

CO $^{1}$ 150 $^{2}$ College Composition (GT-CO2) $^{3}$  Credits: 3 (3-0-0) $^{4}$
Course Description: Understanding and writing for rhetorical situations; critical reading and response; writing source-based argument for academic and public audiences. $^{5}$
Prerequisite: CO 130. $^{6}$
Registration Information: Must have taken CO 130 or Composition Challenge Exam (score of 3, 4, or 5) or have a SAT verbal/critical reading score of 600 or above or ACT COMPOSITE score of 26 or above or Directed Self-Placement Survey score of 15. $^{7}$
Terms Offered: Fall, Spring, Summer. $^{8}$
Grade Mode: Traditional. $^{9}$
Special Course Fee: No. $^{10}$
Additional Information: Intermediate Writing 1A, $^{11}$ Intermediate Writing (GT-CO2).
Refer to the sections below for an explanation of each numbered item.

1. Course Subject Codes
Courses offered by colleges, departments, or units are indicated by course subject codes.

2. Course Numbering
Course numbering is based on the content level of material presented in a course.

| 100-299 | Courses primarily for freshman and sophomore students. |
| 300-499 | Courses primarily for junior and senior students. Acceptable for graduate credit for students holding bachelor's degrees when approved by the student's graduate committee. |
| 500-599 | Courses primarily for students enrolled in master’s-level degree programs or equivalents. Qualified junior and senior students may enroll. |
| 600-699 | Courses primarily for students enrolled in master’s-level programs or equivalents. Undergraduate students may not enroll to satisfy undergraduate degree requirements. |
| 700-799 | Courses primarily for students enrolled in Ph.D.-level programs or equivalents and professional veterinary medicine courses. Undergraduate students may not enroll. |

3. State Guaranteed Transfer (GT- subcode)
By legislation, lower-division CSU courses in categories 1-3 of the All-University Core Curriculum (AUCC) must be submitted to and approved by the Colorado Commission on Higher Education (CCHE) (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html) as general education courses guaranteed to transfer among all public higher education institutions within the state. The subcode refers to the specific statewide general education category the course fulfills. For a complete listing of the courses approved statewide, visit the CCHE (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html). (http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html)

4. Credits and Clock Hour Distribution
The distribution of credit for lecture#laboratory#discussion or recitation class periods per semester is as follows: in the example 04(2#2#1), the figure outside the parentheses indicates the number of credits of this course. Inside the parentheses, the first figure indicates the number of clock hours spent in lectures each week, the second figure indicates the number of clock hours spent in laboratory/studio each week, and the third figure indicates the number of clock hours spent in discussion, recitation, seminar, or other each week.

Variable Credit Courses
VAR indicates variable credit with no specific minimum credit or no maximum credit indicated. Varies 1-18 credits. Prior to registering, students should consult department for the number of credits to enroll in.

Var[3#9] indicates variable credit with minimum credit and maximum credit limitations per term. The course listing may indicate other credit limitations.

5. Course Description
A brief description of the content of the course.

6. Prerequisites
Students must meet all course prerequisites prior to registration for a specific course, or acquire the instructor’s permission.

Permission of the instructor for a student to attend a course is implied when the student has met specified prerequisites. All prerequisites may be considered to have been met if a student presents evidence of credit earned in equivalent courses or if knowledge equivalent to the prerequisites indicated is demonstrated.

A department may limit the enrollment in a course; courses may be limited to a specified number of students, to students of particular majors, or to students of particular class levels.

In the listing in this catalog, only the most recent version of a course number is shown as a prerequisite.

7. Registration Information
Additional course information students need prior to registering for a course. Courses are offered Face-to-Face unless otherwise noted. Courses approved for online are identified. There may be courses offered through CSU Online/Division of Continuing Education (http://www.online.colostate.edu). Check the class schedule or department for
availability. Additional information (e.g. Required Field trips) will be listed here.

8. Terms Offered

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The term or terms listed are those which the course could be scheduled to be offered during the terms indicated. Since the frequency of class offerings is determined by the department in accordance with program needs, students should consult the official, applicable on-line class schedule (available on RAMweb (https://ramweb.colostate.edu)) for courses to be offered in a given term.

The following types of courses do not always indicate term; they will be offered when there is sufficient demand: -84, Supervised College Teaching; #86, Practicum; #87, Internship; #89, Cooperative; #90, #91, Workshop; #92, #93, Seminar; #94, #95, Independent Study; #96, #97, Group Study; #98, Research; and #99, Thesis or Dissertation.

9. Grade Mode

Refer to the Glossary for grade mode definitions.

- Traditional letter grades;
- Satisfactory/Unsatisfactory (S/U) grading only;
- Student Option - Traditional or S/U;
- Instructor Option - Traditional or S/U

10. Special Course Fees (http://provost.colostate.edu/provost/media/sites/75/2016/06/Comprehensive-List-AY17-FINAL.pdf) (http://provost.colostate.edu/files/2015/05/Comprehensive-List-AY16-FINAL.pdf)

Certain courses carry a special fee which is assessed at the time a student registers for the course. For a list of current course fees, refer to the Office of the Provost (http://provost.colostate.edu/provost/media/sites/75/2016/06/Comprehensive-List-AY17-FINAL.pdf).

Certain courses carry a variable fee which is assessed each student enrolled in the course based on expenses that fluctuate (e.g., expendable materials).

11. Additional Information

This notation identifies which, if any, of the categories (i.e., AUCC 1A) the course fulfills in the All-University Core Curriculum (AUCC).

Students are strongly advised to see if their preferred major and concentration has particular recommendations to meet AUCC requirements.
Academic English, Adv-AEAD (AEAD)

Courses

AEAD 8310 English as a Second Language - Academic English, Listening and Speaking Level 3 for Undergraduates  CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree. Improve listening comprehension using Level 3 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: AEAD 8355 to 8359 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEAD 8312; concurrent registration in AEAD 8313; concurrent registration in AEAD 8355 or AEAD 8356 or AEAD 8357 or AEAD 8358 or AEAD 8359 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8312 English as a Second Language - Academic English, Reading and Writing Level 3 for Undergraduates  CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree. Improve reading comprehension using Level 3 texts; incorporate learned grammatical structures present in Level 3 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: AEAD 8355 to 8359 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEAD 8312; concurrent registration in AEAD 8313; concurrent registration in AEAD 8355 or AEAD 8356 or AEAD 8357 or AEAD 8358 or AEAD 8359 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8313 English as a Second Language - Academic English, Grammar Level 3 for Undergraduates  CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree. Focus on grammatical structures present in Level 3 reading and listening texts; incorporate learned grammatical structures in Level 3 writing and speaking tasks.
Prerequisite: AEAD 8355 to 8359 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEAD 8312; concurrent registration in AEAD 8313; concurrent registration in AEAD 8355 or AEAD 8356 or AEAD 8357 or AEAD 8358 or AEAD 8359 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8355 English as a Second Language - Academic English, General NonCore Level 3 for Undergraduates  CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students planning to pursue an undergraduate degree.
Prerequisite: None.
Restrictions: Must major/minor in: INTO Academic English. Must be a: None.
Registration Information: Concurrent registration in AEAD 8310; concurrent registration in AEAD 8312; concurrent registration in AEAD 8313.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8510 English as a Second Language - Academic English, Listening and Speaking Level 3 for Graduates  CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students with a Bachelor’s degree or equivalent. Improve listening comprehension using Level 3 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: AEAD 8555 to 8559 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Restrictions: Must major/minor in: INTO Academic English. Must be a: None.
Registration Information: Concurrent registration in AEAD 8512; concurrent registration in AEAD 8513; concurrent registration in AEAD 8555 or AEAD 8556 or AEAD 8557 or AEAD 8558 or AEAD 8559 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8512 English as a Second Language - Academic English, Reading and Writing Level 3 for Graduates  CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students with a Bachelor’s degree or equivalent. Improve reading comprehension using Level 3 texts; complete well-developed and organized Level 3 writing tasks about ideas from course themes.
Prerequisite: AEAD 8555 to 8559 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEAD 8512; concurrent registration in AEAD 8513; concurrent registration in AEAD 8555 or AEAD 8556 or AEAD 8557 or AEAD 8558 or AEAD 8559 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.
Courses

AEB 8510 English as a Second Language - Academic English, Listening and Speaking Level 1 CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve listening comprehension using Level 1 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: AEB 8555 to 8159 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEB 8112; concurrent registration in AEB 8113; concurrent registration in AEB 8155 or AEB 8156 or AEB 8157 or AEB 8158 or AEB 8159 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEAD 8513 English as a Second Language - Academic English, Grammar Level 3 for Graduates CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Focus on grammatical structures present in Level 3 reading and listening texts; incorporate learned grammatical structures in Level 3 writing and speaking tasks.
Prerequisite: AEAD 8555 to 8559 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEAD 8510; concurrent registration in AEAD 8512; concurrent registration in AEAD 8555 or AEAD 8556 or AEAD 8557 or AEAD 8558 or AEAD 8559 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEB 8555 English as a Second Language - Academic English, General NonCore Level 3 for Graduates CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. For students with a Bachelor’s degree or equivalent.
Prerequisite: None.
Registration Information: Concurrent registration in AEAD 8510; concurrent registration in AEAD 8512; concurrent registration in AEAD 8513.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEBA 8110 English as a Second Language - Academic English, Listening and Speaking Level 1 CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve listening comprehension using Level 1 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: AEBA 8155 to 8159 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEBA 8112; concurrent registration in AEBA 8113; concurrent registration in AEBA 8155 or AEBA 8156 or AEBA 8157 or AEBA 8158 or AEBA 8159 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEBA 8112 English as a Second Language - Academic English, Reading and Writing Level 1 CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve reading comprehension using Level 1 texts; complete well-developed and organized Level 1 writing tasks about ideas from course themes.
Prerequisite: AEBA 8155 to 8159 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEBA 8110; concurrent registration in AEBA 8113; concurrent registration in AEBA 8155 or AEBA 8156 or AEBA 8157 or AEBA 8158 or AEBA 8159 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Academic English, Basic-AEBA (AEBA)
AEEP 8155  English as a Second Language - Academic English, General NonCore Level 1  CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers.
Prerequisite: None.
Registration Information: Concurrent registration in AEEP 8110; concurrent registration in AEEP 8112; concurrent registration in AEEP 8113.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Academic English, EngPgm-AEEP (AEEP)

Courses
AEEP 8393  English as a Second Language – Academic English, Preparatory for IELTS Exam  CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEEP 8493  English as a Second Language - Academic English, Preparatory for IELTS Exam  CEUs: 0 (1.6-0-0)
Course Description: English as a Second Language for non-native speakers.
Prerequisite: (AEIN 8200 with a minimum grade of S or AEAD 8300 with a minimum grade of S) and (AEIN 8204 with a minimum grade of S or AEAD 8400 with a minimum grade of S) and (AEIN 8202 with a minimum grade of S or AEAD 8302 with a minimum grade of S) and (AEIN 8203 with a minimum grade of S or AEAD 8303 with a minimum grade of S) and (AEIN 8204 with a minimum grade of S or AEAD 8400 with a minimum grade of S) and (AEIN 8202 with a minimum grade of S or AEAD 8302 with a minimum grade of S) and (AEIN 8203 with a minimum grade of S or AEAD 8303 with a minimum grade of S).
Registration Information: Not for credit.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEEP 8592  English as a Second Language - Academic English, Preparatory for GMAT Exam  CEU: 1.5 (1.5-0-0)
Course Description: Not for academic credit. GMAT Prep course designed for non-native English Speakers.
Prerequisite: None.
Terms Offered: Fall, Spring.
Special Course Fee: No.

AEEP 8990  English as a Second Language – Summer Program for International Students with Advanced English  CEUs: 6.25 (6.25-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. All new Academic English students are required to register for this course, including those who have completed the Foundations Academic English Program. This course incorporates the curriculum developed for the LINK Mentoring program with curriculum designed to support International students as they adjust to the culture, social expectations, and academic expectations associated with studying and living in the U.S.
Prerequisite: None.
Restrictions: Must major/minor in: INTO Academic English. Must be a: Fulbright scholar or admitted to CSU or Pathways.
Registration Information: Must be enrolled in 1 course of AEBA or AEIN or AEAD. Since students will either be taking core Academic English classes in a morning or afternoon block, registration for a LINK Mentoring section must be opposite the morning or afternoon block of core courses. Term Offered: Fall. (Meet dates are actually in Summer term.)
Special Course Fee: No.

Academic English, Int-AEIN (AEIN)

Courses
AEIN 8210  English as a Second Language - Academic English, Listening and Speaking Level 2  CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve listening comprehension using Level 2 texts; communicate with increasing fluency and accuracy about ideas from course themes.
Prerequisite: AEIN 8255 to 8259 with a minimum grade of S++ - at least 1 course, may be taken concurrently.
Restrictions: Must major/minor in: INTO Academic English. Must be a: Fulbright scholar or admitted to CSU or Pathways.
Registration Information: Concurrent registration in AEIN 8212; concurrent registration in AEIN 8213; concurrent registration in AEIN 8255 or AEIN 8256 or AEIN 8257 or AEIN 8258 or AEIN 8259 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.
AEIN 8212 English as a Second Language - Academic English, Reading and Writing Level 2 CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Improve reading comprehension using Level 2 texts; complete well-developed and organized Level 2 writing tasks about ideas from course themes.
Prerequisite: AEIN 8255 to 8259 with a minimum grade of S++ or at least 1 course, may be taken concurrently.
Restriction: Must major/minor in: INTO Academic English.
Registration Information: Concurrent registration in AEIN 8210; concurrent registration in AEIN 8212; concurrent registration in AEIN 8255 or AEIN 8256 or AEIN 8257 or AEIN 8258 or AEIN 8259 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEIN 8213 English as a Second Language - Academic English, Grammar Level 2 CEUs: 6 (6-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Focus on grammatical structures present in Level 2 reading and listening texts; incorporate learned grammatical structures in Level 2 writing and speaking tasks.
Prerequisite: AEIN 8255 to 8259 with a minimum grade of S++ or at least 1 course, may be taken concurrently.
Registration Information: Concurrent registration in AEIN 8210; concurrent registration in AEIN 8212; concurrent registration in AEIN 8255 or AEIN 8256 or AEIN 8257 or AEIN 8258 or AEIN 8259 non-core course.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

AEIN 8255 English as a Second Language - Academic English, General NonCore Level 2 CEUs: 3 (3-0-0)
Course Description: Not for academic credit. English as a Second Language for non-native speakers.
Prerequisite: None.
Registration Information: Concurrent registration in AEIN 8210; concurrent registration in AEIN 8212; concurrent registration in AEIN 8213.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

ACT 210 Introduction to Financial Accounting Credits: 3 (3-0-0)
Course Description: Use of accounting information by decision makers; development of the basic accounting model, and issues concerning income and cash flows.
Prerequisite: None.
Registration Information: Credit not allowed for both ACT 210 and ACT 205.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 211 Accounting Professional Skills Credit: 1 (1-0-0)
Course Description: Survey of accounting profession career options, certifications, and professional skills.
Prerequisite: ACT 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 311 Intermediate Accounting I Credits: 4 (3-0-1)
Course Description: Preparation and analysis of financial statements under U.S. generally accepted accounting principles (GAAP); accounting for revenue and assets.
Prerequisite: (ACT 205 or ACT 210) with a minimum grade of B- or CS 110, may be taken concurrently with (ACT 205 or ACT 210).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 312 Intermediate Accounting II Credits: 3 (3-0-0)
Course Description: Equity structure of corporations; analysis and interpretation of accounting data.
Prerequisite: ACT 311 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 321 Cost Management Credits: 3 (3-0-0)
Course Description: Utilizing budgetary and cost accounting information for planning, controlling, and decision-making.
Prerequisite: ACT 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 330 Introduction to Taxation Credits: 3 (3-0-0)
Course Description: Introduction to U.S. taxation, with emphasis on federal income tax; impact of taxation on business decisions.
Prerequisite: ACT 205 or ACT 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ACT 350 Accounting Information Systems Credits: 3 (3-0-0)
Course Description: Design, administration and control of accounting information systems; use of accounting systems software.
Prerequisite: ACT 220 and ACT 321.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 411 Advanced Accounting Credits: 3 (3-0-0)
Course Description: Accounting for branches and subsidiaries, partnerships, and business combinations. Accounting for multi-national business transactions.
Prerequisite: ACT 312.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 430 Income Tax Accounting Credits: 3 (3-0-0)
Course Description: Basic structure of federal income tax law; impact of taxes on decision making; social security taxes.
Prerequisite: ACT 330.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 431 Corporate Taxation Credits: 3 (3-0-0)
Course Description: Federal income tax principles pertaining to formation and operation of corporate entities.
Prerequisite: ACT 220 and ACT 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 441 Auditing Practices Credits: 3 (3-0-0)
Course Description: Environment, professional standards, and practices involved in auditing financial statements and performance of other assurance services.
Prerequisite: ACT 312 and ACT 350.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Supervised work experience in public, industry, or governmental accounting.
Prerequisite: None.
Terms Offered: Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ACT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

ACT 501 Accounting for Global Sustainable Enterprise Credits: 3 (3-0-0)
Course Description: Basics of U.S. and international financial reporting; accounting issues of not-for-profit enterprises; budgeting; managerial decision making.
Prerequisite: None.
Registration Information: Admission to GSSE Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 540 Professional Ethics and Responsibilities Credits: 3 (3-0-0)
Course Description: Ethical practice of professional accounting.
Prerequisite: ACT 311.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 541 Forensic Accounting and Fraud Auditing Credits: 3 (3-0-0)
Course Description: Professional practices for addressing the related areas of forensic accounting and fraud.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 550 Accounting Information Technologies Credits: 3 (3-0-0)
Course Description: Best practices for information technologies used in accounting systems worldwide.
Prerequisite: ACT 350.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 561 Legal and Regulatory Issues in Accounting Credits: 3 (3-0-0)
Course Description: Contracts, ownership, bankruptcy (debtor/creditor relationship), formation of business entities, regulation of accounting profession.
Prerequisite: BUS 205 or BUS 260.
Registration Information: Graduate standing or written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 570 Government and Nonprofit Credits: 3 (3-0-0)
Course Description: Theory and practical application of accounting principles and auditing standards to governmental entities and not-for-profit organizations.
Prerequisite: ACT 441, may be taken concurrently.
Registration Information: Graduate standing or written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ACT 575  Oil and Gas Accounting  Credits: 3 (3-0-0)
Course Description: Specialized financial accounting procedures related to the oil and gas industry.
Prerequisite: ACT 311.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 600  Accounting for Managers  Credits: 3 (3-0-0)
Course Description: Cost management, budgeting, profitability analysis and decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 601A  Professional Practice: Taxation  Credits: 3 (3-0-0)
Course Description: Management of accounting practice; professional ethics and regulation; research techniques.
Prerequisite: ACT 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 601B  Professional Practice: Auditing  Credits: 3 (3-0-0)
Course Description: Management of accounting practice; professional ethics and regulation; research techniques.
Prerequisite: ACT 612.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 611  Issues in Financial Reporting and Auditing  Credits: 3 (3-0-0)
Course Description: Contemporary and emerging issues at the intersection of financial reporting and auditing.
Prerequisite: ACT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 614  Financial Statement Analysis and Valuation  Credits: 3 (3-0-0)
Course Description: Tools and techniques of financial statement analysis and application to equity valuation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admitted to Master of Accountancy (M.Acc.) program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 612  Corporate Taxation  Credits: 3 (3-0-0)
Course Description: Federal income tax principles pertaining to formation and operation of corporate entities.
Prerequisite: ACT 220 and ACT 330.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 632  Flow-Through Entities  Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems pertaining to flow-through entities.
Prerequisite: ACT 220.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 635  State and Local Taxation  Credits: 3 (3-0-0)
Course Description: Tax planning and compliance issues for entities doing business in multi-jurisdictional locales.
Prerequisite: ACT 220.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 636  Taxation of Corporations and Shareholders  Credits: 3 (3-0-0)
Course Description: Federal income tax principles and problems relating to reorganization, consolidation, and termination of corporations.
Prerequisite: ACT 220.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 639  Special Topics in Taxation  Credits: 3 (3-0-0)
Course Description: Taxation of not-for-profit entities; international tax issues; other contemporary topics.
Prerequisite: ACT 601A and ACT 631.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 641  Contemporary Auditing  Credits: 3 (3-0-0)
Course Description: Seminar exploring various facets of the assurance services environment.
Prerequisite: ACT 441.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ACT 650  Advanced Accounting Information Systems  Credits: 3 (3-0-0)
Course Description: Research and review of best practices for technology in organizational accounting processes, including advanced skills in spreadsheets and databases.
Prerequisite: ACT 350.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Aerospace Studies-AS (AS)

Courses

**AS 101 Foundations of the Air Force I** Credit: 1 (1-0-0)
Course Description: Air Force opportunities, benefits; emphasis on officership, customs, and communicative skills, group problem solving.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

**AS 102 Foundations of the Air Force II** Credit: 1 (1-0-0)
Course Description: Organizational structure and mission of Air Force organizations; emphasis on leadership, military history, and communicative skills.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**AS 196A Aerospace Group Study I** Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

**AS 196B Aerospace Group Study I** Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

**AS 201 Evolution of Air and Space Power I** Credit: 1 (1-0-0)
Course Description: History of the development of air power and air doctrine from Wright brothers to present emphasizing role of air power; communication skills emphasized.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

**AS 202 Evolution of Air and Space Power II** Credit: 1 (1-0-0)
Course Description: History of air power from World War II to present, examining role of air power in Berlin Airlift, Korean War, Mideast, and Vietnam War.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**AS 296A Aerospace Group Study II** Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

**AS 296B Aerospace Group Study II** Credit: 1 (0-2-0)
Course Description: Leadership Group Study is mandatory for students who are members of ROTC or are eligible to pursue a commission as determined by the Professor of Aerospace Studies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AS 396B  Aerospace Group Study III  Credit: 1 (0-2-0)
Course Description: Concept of leadership; relationship between leadership and management; importance of leadership in the operation and success of any organization.
Prerequisite: AS 296A or AS 296B.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 401  National Security Affairs/Active Duty I  Credits: 3 (3-0-0)
Course Description: Evolution and formulation of U.S. defense policy and strategy, regional conflict studies, Air Force roles and missions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AS 402  National Security Affairs/Active Duty II  Credits: 3 (3-0-0)
Course Description: Professionalism, military justice system, military ethics, commissioning essentials, and emphasis on communication skills.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AS 495  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: AS 202.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 496A  Aerospace Group Study IV  Credit: 1 (0-1-0)
Course Description: Concept of leadership; relationship between leadership and management; importance of leadership in the operation and success of any organization.
Prerequisite: AS 396A or AS 396B.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AS 496B  Aerospace Group Study IV  Credit: 1 (0-2-0)
Course Description: Concept of leadership; relationship between leadership and management; importance of leadership in the operation and success of any organization.
Prerequisite: (AS 396A) and (AS 396B).
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Agricultural Education-AGED (AGED)

Courses
AGED 110  Agriculture Production Systems  Credits: 3 (2-3-0)
Course Description: Broad survey of the diverse aspects of Colorado agriculture.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 210  History of Agriculture in the United States  Credits: 3 (3-0-0)
Course Description: Relationships in agriculture. Historical/Native American/early practices, industrial agriculture, technologies, philosophy, green revolution.
Prerequisite: CO 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

AGED 220  Understanding Agricultural Education  Credit: 1 (1-0-0)
Course Description: Understanding different agricultural education systems. Understanding delivery models of agricultural education programs.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 240  Technical Tool Applications in Ag Education  Credits: 2 (1-3-0)
Course Description: Development of safe competencies and applications related to power and technical tools utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and lab.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 241  Plumbing and Electrical Applications in Ag Ed  Credit: 1 (1-0-0)
Course Description: Development of competencies and theory related to plumbing and electrical applications utilized in school-based agricultural education programs.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 244  Power Systems in Agricultural Education  Credit: 1 (1-0-0)
Course Description: Development of competencies and theory related to agricultural power systems utilized in school-based agricultural education programs.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 320  Technology Lab for Ag Education  Credit: 1 (0-3-0)
Course Description: Laboratory applications related to the power, structure, and technical systems pathway utilized in school-based agricultural education programs.
Prerequisite: AGED 240, may be taken concurrently or AGED 241, may be taken concurrently or AGED 244, may be taken concurrently.
Registration Information: May be taken twice for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
AGED 330 Program Design and Evaluation in Ag. Literacy Credits: 3 (3-0-0)
Course Description: Design and evaluate programs in agricultural literacy using experiential methods.
Prerequisite: AGED 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 420 Developing School-Based Ag Education Programs Credits: 3 (3-0-0)
Course Description: Developing knowledge in the approach and delivery of school-based agricultural education programs.
Prerequisite: AGED 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 430 Methods of Agricultural Literacy Credits: 3 (3-0-0)
Course Description: Prepare and conduct agricultural literacy instructional units to work with a variety of audiences and instructional topics.
Prerequisite: AGED 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 486 Practicum Credits: Var[2-6] (0-0-0)
Course Description: Supervised work experience in approved agricultural education setting with periodic consultation of faculty.
Prerequisite: AGED 220.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 540 Ag Ed Laboratory Management and Safety Credits: 2 (2-0-0)
Course Description: Theory, management, and pedagogy of delivering safety instruction and experiential curriculum in secondary agricultural education laboratory settings.
Prerequisite: EDCT 420.
Restriction: .
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Agriculture + Resrce Econ-AREC (AREC)

Courses
AREC 202 Agricultural and Resource Economics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Introduction to decision-making by consumers, firms, and government and the resulting allocation of resources through markets.
Prerequisite: MATH 117, may be taken concurrently or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Credit not allowed for both AREC 202 and ECON 202.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

AREC 224 Introduction to Agribusiness Entrepreneurship Credit: 1 (0-0-1)
Course Description: Introductory exposure to entrepreneurship for agribusinesses through presentations by industry professionals.
Prerequisite: AREC 202, may be taken concurrently or ECON 202, may be taken concurrently.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 240 Issues in Environmental Economics (GT-SS1) Credits: 3 (3-0-0)
Also Offered As: ECON 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both AREC 240 and ECON 240.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).
AREC 305 Agricultural and Resource Enterprise Analysis Credits: 3 (2-2-0)
Course Description: Use of records in agricultural and resource enterprise management; analytical methods, budgets, and planning techniques for improved decision making.
Prerequisite: (CIS 120 or BUS 150 or CS 110) and (AREC 202 or ECON 202).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 310 Agricultural Marketing Credits: 3 (3-0-0)
Course Description: Market structure, behavior, and performance including futures market and market games theory.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 311 Agricultural and Resource Product Marketing Credits: 3 (3-0-0)
Course Description: Theory and practice of marketing-differentiated agricultural products and natural resource amenities with focus on strategies and market trends.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 325 Personnel Management in Agriculture Credits: 3 (3-0-0)
Course Description: Human resource issues for agribusiness firms. Managing employees, legal issues, negotiation methods, and benefits packages. Workplace professionalism.
Prerequisite: AREC 202 or ECON 202.
Restriction: .
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 328 Small Agribusiness Management Credits: 3 (3-0-0)
Course Description: Apply business principles to small agribusinesses and cooperatives.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 335 Introduction to Econometrics Credits: 3 (3-0-0)
Also Offered As: ECON 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (MATH 141 or MATH 155 or MATH 160) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Credit not allowed for both AREC 335 and ECON 335.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 340 Introduction: Economics of Natural Resources Credits: 3 (3-0-0)
Also Offered As: ECON 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Credit not allowed for both AREC 340 and ECON 340. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 341 Environmental Economics Credits: 3 (3-0-0)
Course Description: Economic theories and analytic frameworks are developed and applied to contemporary problems of the use and protection of the natural environment.
Prerequisite: (AREC 202 or ECON 202) and (AREC 240 or ECON 240).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 342 Water Law, Policy, and Institutions Credits: 3 (3-0-0)
Course Description: Legal water issues within the context of historical, social and economic development with emphasis on the southwestern United States.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)
Also Offered As: ECON 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Credit not allowed for both AREC 346 and ECON 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 347 Agricultural Law Credits: 3 (3-0-0)
Course Description: Laws, regulations, case decisions affecting ranching and farming in the Rocky Mountain area.
Prerequisite: None.
Restriction: Must be a: Junior.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 381 Introduction to Environmental Economics Credits: 3 (3-0-0)
Course Description: Design and measurement of economic values and environmental policy; how the theory can be used to construct solutions to real-world problems.
Prerequisite: (AREC 202 or ECON 202) and (MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
AREC 405 Agricultural Production Management Credits: 3 (2-2-0)
Course Description: Economic principles of agricultural production decisions with linear programming analysis of production choices and farm planning.
Prerequisite: AREC 305.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 408 Agricultural Finance Credits: 3 (3-0-0)
Course Description: Monetary affairs of agribusiness and agricultural production emphasizing credit institutions and procurement, investment, and management.
Prerequisite: AREC 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 412 Agricultural Commodities Marketing Credits: 3 (3-0-0)
Course Description: Agricultural marketing and agribusiness principles applied to current marketing problems relating to livestock and field and horticultural crops.
Prerequisite: AREC 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AREC 415 International Agricultural Trade Credits: 3 (3-0-0)
Course Description: Agricultural trade patterns and institutions; trade theory with applications to agriculture. Current issues in agricultural trade.
Prerequisite: AREC 310 and ECON 204.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 428 Agricultural Business Management Credits: 3 (3-0-0)
Course Description: Economic analysis, organization, and management practices of agriculture and food industries studied through simulation, case study, computer labs.
Prerequisite: AREC 305 and AREC 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 440 Advanced Environmental and Resource Economics Credits: 3 (3-0-0)
Course Description: Microeconomic techniques to rigorously explore economic decision-making and policy as they apply to environmental and natural resource problems.
Prerequisite: (AREC 340 or ECON 340) and (AREC 341 and ECON 306).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 442 Water Resource Economics Credits: 3 (3-0-0)
Course Description: An in-depth exploration of the role of economics in water resource planning.
Prerequisite: AREC 342 and ECON 306, may be taken concurrently.
Registration Information: Credit not allowed for both AREC 442 and AREC 542.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 452 Real Estate Appraisal Principles Credits: 2 (2-0-0)
Also Offered As: REL 452.
Course Description: Theoretical principles that underlie real estate appraisal methods.
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).
Registration Information: Credit not allowed for both AREC 452 and REL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 453 Real Estate Appraisal Practices Credits: 2 (2-0-0)
Also Offered As: REL 453.
Course Description: Procedures and practices used in real estate appraisal.
Prerequisite: AREC 452, may be taken concurrently or REL 452.
Registration Information: Credit not allowed for both AREC 453 and REL 453.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 460 Ag- and Resource-Based Economic Development Credits: 3 (3-0-0)
Course Description: Indicators, tools and approaches for agriculture- and natural resource-based economic development in resource dependent countries and communities.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 478 Agricultural Policy Credits: 3 (3-0-0)
Course Description: Formulation and administration of public policies affecting agricultural industries and rural areas in the United States.
Prerequisite: AREC 202 or ECON 202 or AREC 240 or ECON 240.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 487 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
AREC 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 505 Agricultural Production Economics Credits: 3 (3-0-0)
Course Description: Empirical applications of production economic theory for use of inputs and allocation of resources in agricultural, natural resource sectors.
Prerequisite: (MATH 141) and (AREC 405 or ECON 306).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 506 Applied Microeconomic Theory Credits: 3 (3-0-0)
Also Offered As: ECON 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both AREC 506 and ECON 506.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 507 Applied Welfare and Policy Analysis Credits: 3 (3-0-0)
Course Description: How policies are crafted to effectively address social issues, especially for agriculture and the environment, and how they impact society.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 508 Financial Management in Agriculture Credits: 2 (2-0-0)
Course Description: Systematic approach to understanding and applying financial management in farm businesses.
Prerequisite: (AREC 408 or FIN 305) and (ECON 306).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 510 Agricultural Product Marketing Credits: 3 (3-0-0)
Course Description: Marketing techniques, industrial organization/competition for agricultural products in US domestic, international trade, and developing country markets.
Prerequisite: (AREC 310) and (AREC 335 or ECON 335).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 528 Applied Agribusiness Decision Tools Credits: 2 (2-0-0)
Course Description: Applications of quantitative tools for managerial decision-making in the context of an agribusiness.
Prerequisite: (AREC 305 or AREC 408 or FIN 305) and (ECON 306).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 530 Agricultural Price Analysis Credits: 3 (3-0-0)
Course Description: Agricultural commodity prices related to neoclassical economics; current literature emphasizing management problems.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 535 Applied Econometrics Credits: 3 (3-0-0)
Also Offered As: ECON 535.
Course Description: Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.
Prerequisite: (AREC 335 or ECON 335) and (ECON 304 or ECON 306).
Registration Information: Credit not allowed for both AREC 535 and ECON 535.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: ECON 540.
Course Description: Theory, methods, and policy in environmental and natural resource economics.
Prerequisite: AREC 506 or ECON 506.
Registration Information: Credit not allowed for both AREC 540 and ECON 540.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 541 Environmental Economics Credits: 3 (3-0-0)
Also Offered As: ECON 541.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both AREC 541 and ECON 541.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 542 Applied Advanced Water Resource Economics Credits: 3 (3-0-0)
Course Description: Theory and application of economics in water resource planning.
Prerequisite: (ECON 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both AREC 542 and AREC 442.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 547 Public Lands Planning and Management Credits: 3 (3-0-0)
Course Description: Principles and techniques used by federal land management agencies including Forest Service, Park Service, Fish and Wildlife Service, and BLM.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
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<tbody>
<tr>
<td>AREC 563</td>
<td>Regional Economics-Theory, Methods, and Issues</td>
<td>3 (3-0-0)</td>
<td>(AREC 535 or ECON 535) and (ECON 501, may be taken concurrently)</td>
<td>Fall</td>
<td>Traditional</td>
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<td>Also Offered As: ECON 563.</td>
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<td>Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.</td>
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<td>Prerequisite: ECON 306 and ECON 501, may be taken concurrently.</td>
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<td>Registration Information: Credit not allowed for both AREC 563 and ECON 563.</td>
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<td>Term Mode: Fall.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 566</td>
<td>Contemporary Issues in Developing Countries</td>
<td>3 (3-0-0)</td>
<td></td>
<td>Spring (odd years)</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
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<td>Also Offered As: SOC 566.</td>
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<td></td>
<td>Course Description: Social, economic, and technological factors in developing countries.</td>
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<td>Prerequisite: None.</td>
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<td>Registration Information: Two or more courses in AREC or ECON or SOC. Credit not allowed for both AREC 566 and SOC 566.</td>
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<td>Term Mode: Spring (odd years).</td>
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<td>Grade Mode: S/U within Student Option, Trad within Student Option.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 570</td>
<td>Methodology of Economic Research</td>
<td>3 (3-0-0)</td>
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<td>Fall (even years)</td>
<td>Traditional</td>
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<td>Also Offered As: ECON 530.</td>
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<td>Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.</td>
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<td>Prerequisite: ECON 304 and ECON 306.</td>
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<td>Registration Information: Credit not allowed for both AREC 570 and ECON 530.</td>
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<td>Term Mode: Fall.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 572</td>
<td>Social Benefit Cost Analysis</td>
<td>3 (3-0-0)</td>
<td></td>
<td>Fall</td>
<td>Traditional</td>
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<td>Also Offered As: ECON 530.</td>
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<td>Course Description: Theory, application of concepts relating to social benefit cost analysis of public projects, policies intended to promote social welfare, economic growth.</td>
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<td>Prerequisite: ECON 306.</td>
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<td>Term Mode: Fall.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 605</td>
<td>Agricultural Production and Cost Analysis</td>
<td>2 (2-0-0)</td>
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<td>Spring</td>
<td>Traditional</td>
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<td>Also Offered As: ECON 530.</td>
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<td>Course Description: Empirical application and analysis of production and cost issues in the agricultural and natural resource sectors.</td>
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<td>Prerequisite: (AREC 506) and (AREC 535 or ECON 535).</td>
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<td>Restriction: Must be a: Graduate, Professional.</td>
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<td>Term Mode: Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 606</td>
<td>Microeconomic Analysis I</td>
<td>3 (3-0-0)</td>
<td></td>
<td>Spring</td>
<td>Traditional</td>
<td>No</td>
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<td>Also Offered As: ECON 606.</td>
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<td>Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.</td>
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<td>Prerequisite: ECON 306 and ECON 501.</td>
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<td>Term Mode: Spring.</td>
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<td>AREC 610</td>
<td>Agricultural Marketing and Demand Analysis</td>
<td>2 (2-0-0)</td>
<td></td>
<td>Spring</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
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<td>Also Offered As: ECON 606.</td>
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<td>Course Description: Empirical application and analysis of agricultural marketing and demand issues in the agricultural and natural resource sectors.</td>
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<td>Prerequisite: (AREC 506) and (AREC 535 or ECON 535).</td>
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<td>Term Mode: Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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AREC 660  Development of Rural Resource-Based Economies  Credits: 3 (3-0-0)
Course Description: Economic literature-based exploration of human welfare measures and implications of approaches to agriculture and resource-based economic development.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 678  Agricultural and Resource Policy  Credits: 3 (3-0-0)
Course Description: Evaluate and analyze economic theory, applications and public incentives related to government policies for agriculture and natural resources.
Prerequisite: ECON 306 and MATH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 695  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 705  Advanced Production and Technological Change  Credits: 2 (2-0-0)
Course Description: Production theory is applied to real-world issues including risk, innovation, and environment, through lectures and readings of current literature.
Prerequisite: (AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 706  Microeconomic Analysis II  Credits: 3 (3-0-0)
Also Offered As: ECON 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 706 and ECON 706.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 710  Advanced Agricultural Marketing Issues  Credits: 2 (2-0-0)
Course Description: Theoretical and modeling issues of consumer demand, market structure, product differentiation and market behavior.
Prerequisite: (AREC 610) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 735  Econometric Theory II  Credits: 2 (2-0-0)
Also Offered As: ECON 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 735 and ECON 735. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736A  Advanced Econometric Methods: Discrete Choice Models  Credit: 1 (1-0-0)
Also Offered As: ECON 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736B  Advanced Econometric Methods: Panel Data Models  Credit: 1 (1-0-0)
Also Offered As: ECON 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 736C  Advanced Econometric Methods: Time Series Models  Credit: 1 (1-0-0)
Also Offered As: ECON 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Agriculture-AGRI (AGRI)

Courses

AGRI 116 Plants and Civilizations (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: IE 116.
Course Description: Plant origins and their relationships with cultures/civilizations as food, spices, perfumes, and medicines and in art, religion, wars, slavery, etc.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 116 and IE 116. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

AGRI 192 Orientation to Agricultural Systems Credit: 1 (0-0-1)
Course Description: Freshman inquiry course in agriculture. Information and skills necessary to succeed in majors in the agricultural sciences.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 270 World Interdependence-Population and Food (GT-SS3) Credits: 3 (3-0-0)
Also Offered As: IE 270.
Course Description: Survey of world population and food; emphasis on understanding the problems and opportunities in a world context.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 270 and IE 270.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 292 Transfer Seminar Credit: 1 (1-0-0)
Course Description: The university and its resources, college success skills, careers in the various disciplines of agriculture; current issues in agriculture.
Prerequisite: None.
Registration Information: Intended for Transfer students.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 300  Issues in Agriculture  Credits: 2 (2-0-0)
Course Description: Scientific, technical, cultural, and social issues facing agriculture, and their interrelationships.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 300 and AGRI 500. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
AGRI 330  Agricultural and Food System Ethics  Credits: 3 (3-0-0)
Also Offered As: PHIL 330.
Course Description: Basic concepts in ethics and their application to agriculture and the food system.
Prerequisite: CO 150.
Registration Information: Credit not allowed for both AGRI 330 and PHIL 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 383  U.S. Travel-Integrated Resource Management  Credits: 2 (0-2-1)
Also Offered As: NR 383.
Course Description: Evaluation of integrated ranch management decision alternatives in conjunction with professional resource managers.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 383 and NR 383. Must register for laboratory and recitation. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 465  Pesticide Management  Credits: 3 (0-0-3)
Course Description: Reasons for and safe and correct pesticide use.
Prerequisite: None.
Registration Information: Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 468  Management and Control of Turfgrass Pests  Credits: 3 (0-0-3)
Course Description: Classification of turfgrass pests; pest management, control, environmental concerns, industry regulations; safety, skill in pesticide applications.
Prerequisite: None.
Registration Information: Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 496A  Group Study: General  Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
AGRI 496B  Group Study: Agricultural Ambassadors  Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
AGRI 500  Advanced Issues in Agriculture  Credits: 3 (2-0-1)
Course Description: Scientific, technical, cultural, and social issues facing agriculture, and their interrelationships.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 500 and AGRI 300. Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 510  Sustainable Agriculture  Credits: 3 (3-0-0)
Course Description: An interdisciplinary study comparing conventional and alternative land management practices, using an agroecosystem analysis approach.
Prerequisite: None.
Registration Information: Enrollment in INTO Master of Agriculture Pathways or graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 515  Urban Horticulture  Credits: 3 (3-0-0)
Also Offered As: HORT 515.
Course Description: Investigate and evaluate the techniques of incorporating food production systems in the urban and peri-urban environment.
Prerequisite: HORT 450A or HORT 450B or HORT 450C or HORT 450D.
Registration Information: Credit not allowed for both AGRI 515 and HORT 515. Offered only online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 521 Emerging Issues and Challenges for Global Agr Credits: 3 (3-0-0)
Course Description: Interdisciplinary course containing tools and knowledge to discuss the emerging challenges of the global agriculture, water, and food system.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 545 Plant Tissue Culture Credits: 2 (2-0-0)
Course Description: Theory, technology, and techniques of cell, organ, tissue, and protoplast culture of plants.
Prerequisite: BZ 440.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 546 Principles of Cooperative Extension Credits: 3 (3-0-0)
Course Description: Traditional and contemporary delivery systems of Cooperative Extension emphasizing structures of nonformal education.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 547 Delivery of Cooperative Extension Programs Credits: 4 (2-2-0)
Course Description: Methods, techniques, and procedures in planning, implementation, and delivery of Cooperative Extension programs.
Prerequisite: None.
Registration Information: Written consent of instructor. Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 550 Capacity Building for a Changing Workplace Credits: 3 (3-0-0)
Course Description: A framework for competence in workplaces applies situation analysis/problem-solving to solve real-life agricultural situations shared by experts.
Prerequisite: None.
Registration Information: Graduate standing in agricultural sciences. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 562 Sociology of Food Systems and Agriculture Credits: 3 (2-0-1)
Also Offered As: SOC 562.
Course Description: How agricultural choices generate intended and unintended consequences for human communities and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for both AGRI 562 and SOC 562.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 5601 Bioenergy Technology Credits: 3 (2-2-0)
Course Description: Science and engineering aspects of bioenergy production, including plant biology, fermentation, and biofuel properties.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AGRI 601 and ENGR 601. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 570 Issues in Animal Agriculture Credits: 2 (2-0-0)
Also Offered As: VS 570.
Course Description: Issues that have a major impact on the direction of changes in animal agriculture.
Prerequisite: None.
Registration Information: Credit not allowed for both AGRI 570 and VS 570.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 587A Internship: Domestic Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for AGRI 587A-B. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 587B Internship: International Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for AGRI 587A-B. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 601 Bioenergy Policy, Economics, and Assessment Credits: 3 (2-2-0)
Course Description: Bioenergy policy; economic principles applied to biofuel production; evaluation of environmental impacts on bioenergy production.
Prerequisite: AGRI 601 or ENGR 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 630 Integrated Decision Making/Management Skills Credits: 3 (3-0-0)
Course Description: Motivation for management, decision making, introduction to systems, information management, introduction to statistics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
AGRI 631 Building the Business Credits: 3 (3-0-0)
Course Description: Skills required to organize and implement a modern business enterprise with focus on land-based operations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 632 Managing for Ecosystem Sustainability Credits: 3 (2-2-0)
Course Description: Impacts of ecological processes, use of mechanism-based understanding, and tools used to manage the ecosystem for sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 633 Understanding and Managing Animal Resources Credits: 3 (2-2-0)
Course Description: Evaluating nutritional requirements of a variety of animals, how and why requirements vary according to level of production.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 634 Animal Production Systems Credits: 3 (2-2-0)
Course Description: Developing animal management systems for a variety of animal species in a forage-based environment.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 635 Integrated Forage Management Credits: 3 (3-0-0)
Course Description: Development of management plans that integrate diverse forage resources including native rangeland and cultivated forages.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 636 Analyzing and Managing the Business Credits: 3 (3-0-0)
Course Description: Assimilating, preparing, and analyzing records; reading financial statements to manage a land-based business.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 637 Understanding Policy and Emerging Issues Credits: 3 (3-0-0)
Course Description: Origination, purpose, and policy effects on land-based enterprises; policy effects on management decisions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 638 Ecosystem Services on Agricultural Lands Credits: 3 (3-0-0)
Course Description: Within an economics framework, explores the unique management challenges involved in a modern, diversified agricultural operation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 639 Products to Profit Credits: 3 (3-0-0)
Course Description: Marketing all aspects of the enterprise, beginning with land and forage resource and tracking all revenue generation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 640 Integrated Resource Management Plan Credits: 3 (3-0-0)
Course Description: Formulation of an optimal land management plan for a specific site based on specific goals and objectives.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGRI 684 Supervised College Teaching Credits: Var[1-2] (0-0-0)
Course Description: Must register for lecture and laboratory. Sections may be offered: Online.
Restriction: Maximum of 4 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
AGRI 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 695 Independent Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

AGRI 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGRI 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Thesis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

American Studies-AMST (AMST)

Courses
AMST 100 Self/Community in American Culture, 1600-1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture, 1600-1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 101 Self/Community in American Culture Since 1877 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Meaning and development of American culture since 1877, through themes of self and community in art, politics, society, and religion.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, Literature & Humanities (GT-AH2).

AMST 300 American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: E 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both AMST 300 and E 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AMST 492 Seminar in American Studies Credits: 3 (0-0-3)
Course Description: Seminar for seniors in Liberal Arts involving critical reading, writing, research, and discussion. Topics vary.
Prerequisite: AMST 300 or E 300.
Registration Information: Senior standing or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AMST 495 Independent Study in American Studies Credits: Var[1-3] (0-0-0)
Course Description: Individually-guided studies in interdisciplinary work in American culture.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AMST 499 Thesis in American Studies Credits: 3 (0-0-3)
Course Description:
Prerequisite: AMST 492.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Animal Sciences-ANEQ (ANEQ)

Courses
ANEQ 101 Food Animal Science Credits: 4 (3-3-0)
Course Description: Development, organization, trends and management of the livestock industry; emphasis on applying science to the production of food and fiber.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 102 Introduction to Equine Science Credits: 4 (3-2-0)
Course Description: Equine physiology, production systems and management systems as it pertains to the equine industry and management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
ANEQ 104 Values, Culture, and Food Animal Agriculture  Credits: 
3 (3-0-0)
Also Offered As: PHIL 104.

Course Description: Evolution of the social values and cultural 
understandings shaping modern animal agriculture; current problems in 
animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with a freshman 
or sophomore standing. Credit not allowed for both ANEQ 104 and 
PHIL 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 105 Introduction to Large Animal Anatomy  Credit: 1 (0-2-0)
Course Description: Basic gross animal anatomy.
Prerequisite: None.
Registration Information: Animal Science or Equine Science majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201A Preparation of Horses for Competition: Western  Credits: 
2 (0-4-0)
Course Description: Development of skills to prepare and present horses 
in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 201B Preparation of Horses for Competition: English  Credits: 
2 (0-4-0)
Course Description: Development of skills to prepare and present horses 
in competitions aimed at enhancing their value.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 202 Safety in Horse Handling  Credit: 1 (1-0-0)
Course Description: Horse handling safety skills.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

ANEQ 203 Equine Management  Credits: 2 (1-2-0)
Course Description: Equine management and care techniques with 
hands-on experience.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 204 Equine Facilities Management  Credits: 3 (2-2-0)
Course Description: Understanding of all aspects required to manage an 
equine facility coupled with hands-on experience.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory. 
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 220 Feeds and Feeding  Credits: 2 (2-0-0)
Course Description: Advantages and limitations of feedstuffs; nutrients 
and their functions; and feed practices for all physiological stages of 
livestock.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 230 Farm Animal Anatomy and Physiology  Credits: 3 (3-0-0)
Course Description: Basic concepts of farm animal anatomy and 
physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: LIFE 100 to 199 - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 230 and 
ANEQ 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 249 Introduction to the Trail Riding Industry  Credit: 1 (0-2-0)
Course Description: Emphasis on horse care, regulations, first aid, health, 
training, and hosting a trail ride.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 250 Live Animal and Carcass Evaluation  Credits: 3 (1-4-0)
Course Description: Growth, development, and value-determining 
characteristics of market animals.
Prerequisite: ANEQ 101 or ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 286 Livestock Practicum  Credits: 2 (0-0-0)
Course Description: Livestock breeds and terminology; classification 
of feedstuffs; livestock handling and care; basic animal management 
techniques, hands-on experience.
Prerequisite: ANEQ 101 or ANEQ 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 292 Equine Industry Seminar  Credit: 1 (1-0-0)
Course Description: Overview of the equine industry and industry careers.
Prerequisite: ANEQ 102.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 293 Animal Science Career Exploration Seminar Credit: 1 (0-0-1)
Course Description: Better understanding of individual abilities, strengths and passions is imperative to be successful in a career search as well as to succeeding in life. Designed to help students explore who they are individually, how they might fit into a career or graduate programs in animal agriculture; how to prepare marketing materials to be competitive in selection processes.
Prerequisite: ANEQ 101.
Registration Information: This is a partial semester course. Sophomore standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300A Topics in Animal Sciences: Livestock Handling Credit: 1 (1-0-0)
Course Description: Overview of beef seedstock industry, including hands-on selection, management, and marketing of cattle.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 300B and BSPM 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300B Topics in Animal Sciences: Livestock Entomology Credit: 1 (1-0-0)
Also Offered As: BSPM 300.
Course Description: Identification, biology and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both ANEQ 300B and BSPM 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300E Topics in Animal Sciences: Family Ranching Credit: 1 (1-0-0)
Course Description: Overview of beef seedstock industry, including hands-on selection, management, and marketing of cattle.
Prerequisite: ANEQ 101 or ANEQ 102.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300T Topics in Animal Sciences: Event, Fair, and Show Management Credit: 1 (1-0-0)
Course Description: Develop, plan, and implement an effective seedstock cattle sale based on genetic information, customer service principles, and client relationships.
Prerequisite: ANEQ 300N.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 300R Topics in Animal Sciences: Calving and Calf Care Credits: 2 (1-2-0)
Course Description: Practices which maximize the benefits of manure to soils and crops while minimizing hazards to air and water quality; complying with regulations.
Prerequisite: ANEQ 101 or ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 305 Functional Large Animal Anatomy/Physiology Credits: 3 (3-0-0)
Course Description: Concepts of large animal anatomy and physiology; emphasis on growth, digestion, and reproduction.
Prerequisite: (LIFE 100 to 199 - at least 3 credits) and (CHEM 107 or CHEM 111).
Restriction: Credit not allowed for both ANEQ 305 and ANEQ 230.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 310 Animal Reproduction Credits: 3 (3-0-0)
Course Description: Anatomy and physiology of the reproductive system; causes of reproductive failure in farm animals; methods of improving reproductive performance.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 312 Animal Ultrasonography Credits: 2 (1-2-0)
Course Description: Fundamentals and application of using ultrasound in farm animals; basic reproductive technologies; utilizing ultrasound as a management tool.
Prerequisite: (ANEQ 230 or ANEQ 305) and (ANEQ 310).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 313 Prevention and Control of Livestock Diseases Credits: 3 (3-0-0)
Also Offered As: VS 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Junior or senior standing. Credit not allowed for both ANEQ 313 and VS 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 315 Equine Behavior Credits: 2 (1-2-0)
Course Description: Equine behaviors related to training and learning.
Prerequisite: ANEQ 102.
Registration Information: Sophomore or higher standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 320 Principles of Animal Nutrition Credits: 4 (3-3-0)
Course Description: Understanding of nutrients and nutrient function required to support animal life through all physiological states.
Prerequisite: (ANEQ 230 or BMS 300 or BMS 360 or ANEQ 305) and (CHEM 100 to 199 - at least 3 credits).
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 322 Pet Nutrition Credits: 2 (2-0-0)
Course Description: Nutrients, nutrient requirements, feeding practices, food sources and management for companion animals (dogs, cats, birds, fish, reptiles, etc.).
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 323 Zoo Nutrition Credits: 2 (2-0-0)
Course Description: Unique nutritional requirements of mammalian, avian, and reptile captive wild animals; management protocols needed.
Prerequisite: ANEQ 320 or ANEQ 345 or FSHN 350.
Registration Information: Offered as a correspondence or online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 325 Equine Exercise Physiology Credits: 2 (2-0-0)
Course Description: Overview of the main aspects of equine exercise physiology.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 328 Foundations in Animal Genetics Credits: 3 (3-0-0)
Course Description: Foundational information of the influence of the genome and its genes on qualitative and quantitative traits in animal populations.
Prerequisite: (ANEQ 101 or ANEQ 102) and (LIFE 102).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 330 Principles of Animal Breeding Credits: 3 (3-0-0)
Course Description: Principles of selection and genetic improvement of horses, including economically relevant qualitative and quantitative traits.
Prerequisite: (ANEQ 102) and (BZ 350 or ANEQ 328 or SOCR 330) and (STAT 200 to 279 - at least 3 credits or STAT 300 to 379).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 334 Principles of Equine Genetics Credits: 3 (3-0-0)
Course Description: Principles of selection and genetic improvement of horses, including economically relevant qualitative and quantitative traits.
Prerequisite: (ANEQ 102) and (BZ 350 or ANEQ 328 or SOCR 330) and (STAT 301 or STAT 307).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 340 Horse Training and Sale Preparation I Credits: 3 (0-6-0)
Course Description: Practical training skills using a yearling or two year old: in-hand, restraint, ground driving, lunging, first rides, stable management.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 341 Horse Training and Sale Preparation II Credits: 3 (0-6-0)
Course Description: Skills in training for specific riding maneuvers, conditioning, and fitting for sale.
Prerequisite: ANEQ 340.
Registration Information: Additional time outside of class required on weekends.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 344 Principles of Equine Reproduction Credits: 4 (3-2-0)
Course Description: Principles of reproduction and reproductive management of the mare and stallion.
Prerequisite: (ANEQ 102) and (ANEQ 230 or BMS 300 or ANEQ 305).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
ANEQ 345 Principles of Nutrition: Equine Applications Credits: 3 (3-0-0)
Course Description: Principles of nutrition; application in feeding horses in different physiological states to promote health and wellness.
Prerequisite: (ANEQ 102) and (ANEQ 230 or BMS 300 or ANEQ 305) and
(CHEM 100 to 199 - at least 3 credits and MATH 100 to 499 - at least 3 credits).
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 346 Equine Disease Management Credits: 4 (3-2-0)
Course Description: Normal and abnormal body structures and functions of major systems of the horse. Recognition of main diseases, causes, prevention and treatments.
Prerequisite: ANEQ 230 or BMS 300 or ANEQ 305.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 348 Equine Training Techniques Credits: 2 (1-2-0)
Course Description: Training techniques in multiple riding disciplines.
Prerequisite: ANEQ 315.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 349 Packing and Outfitting Credits: 2 (1-2-0)
Course Description: Business aspects of outfitting/packing the horse; hitches, knots, horse care; planning pack trips, setting up camp.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips (Overnight pack trip).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 351 Techniques in Therapeutic Riding Credits: 2 (1-2-0)
Course Description: Equine assisted activities; therapeutic horseback riding, hippotherapy, driving/vaulting, mental health treatments, programs for youth at risk.
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 352 Introduction to Horse Evaluation Credits: 2 (0-4-0)
Course Description: Criteria and techniques for evaluation of horses; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 353 Advanced Horse Evaluation Credits: 3 (0-6-0)
Course Description: Advanced criteria/techniques for horse evaluation; logical decision process development to establish comparative value; intercollegiate competition.
Prerequisite: ANEQ 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 354 Introduction to Livestock Evaluation Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of livestock; development of logical decision processes for establishing comparative value.
Prerequisite: ANEQ 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 355 Advanced Livestock Evaluation Credit: 1 (0-9-0)
Course Description: Advanced criteria and techniques for evaluation of livestock; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 354.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 356  Introduction to Dairy Evaluation  Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of dairy cattle; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 357  Advanced Dairy Evaluation  Credits: 2 (0-4-0)
Course Description: Advanced criteria and techniques for evaluation of dairy cattle; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 358  Equine Event and Sales Management  Credits: 2 (2-0-0)
Course Description: Skills necessary to produce, organize, and promote equine related events.
Prerequisite: ANEQ 102.
Registration Information: Credit not allowed for both ANEQ 358 and ANEQ 300T.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 359  Equine Sales Production  Credits: 2 (0-4-0)
Course Description: Emphasizes skills necessary to host and evaluate an equine sale.
Prerequisite: ANEQ 358.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 360  Principles of Meat Science  Credits: 3 (3-0-0)
Course Description: Structure, composition, and biology of muscle and associated tissues; wholesomeness, nutritive value, and palatability of beef, pork, and lamb.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 361  Introduction to Meat Product Evaluation  Credits: 3 (0-6-0)
Course Description: Criteria and techniques for evaluation of meat products; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 362  Advanced Meat Product Evaluation  Credit: 1 (0-4-0)
Course Description: Criteria and techniques for evaluation of meat products; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 361.
Course may be taken twice for a maximum of 2 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 363  Introduction to Wool and Fiber Evaluation  Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; development of logical decision processes for establishing comparative value.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 364 Advanced Wool and Fiber Evaluation  Credit: 1 (0-2-0)
Course Description: Criteria and techniques for evaluation of wool; establishing comparative value; participating in intercollegiate competition.
Prerequisite: ANEQ 363.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 365 Principles of Teaching Therapeutic Riding Credits: 3 (2-2-0)
Course Description: Practical experiences and knowledge of the techniques to be a professional certified therapeutic riding instructor.
Prerequisite: ANEQ 351.
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 386A Equine Practicum: Equine Training and Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANEQ 386B Equine Practicum: Equine Reproductive Management Credits: 2 (1-2-0)
Course Description:
Prerequisite: ANEQ 344.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANEQ 386C Equine Practicum: Equine Farrier Management Credit: 1 (0-2-0)
Course Description:
Prerequisite: ANEQ 102.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANEQ 420 Applied Nutrition--Computer Diet Formulation Credits: 3 (3-0-0)
Course Description: Comparative diet formulation strategies for cattle (beef and dairy), equine, swine, and poultry. Utilizing advanced computer software to formulate diets, predict performance, and manage ingredient inventory.
Prerequisite: ANEQ 320 or ANEQ 345.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 440 Equine Industry and Issues Credits: 3 (3-0-0)
Course Description: For students planning a career in the horse industry; management of facilities, production systems, personnel, marketing, and biological systems.
Prerequisite: ANEQ 344 and ANEQ 345 or ANEQ 334 and ANEQ 344 or ANEQ 345 and ANEQ 346 or ANEQ 334 and ANEQ 345 or ANEQ 346 or ANEQ 334 and ANEQ 346.
Registration Information: Any two of the following: ANEQ 334, ANEQ 344, ANEQ 345, ANEQ 346.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 441 Integrated Equine Science Credits: 2 (2-0-0)
Course Description: Describe, understand and integrate the newest scientific principles in equine sciences with equine management.
Prerequisite: ANEQ 334 and ANEQ 345 and ANEQ 346 and ANEQ 344.
Term Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 442 Riding Instructor Training Credits: 2 (0-4-0)
Course Description: Teaching techniques; theory; handling of large mounted groups, beginner through advanced levels.
Prerequisite: ANEQ 102.
Registration Information: Written consent of instructor.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 443 Applied Equine Nutrition Credits: 2 (1-2-0)
Course Description: Applying principles of nutrition to feeding horses in different physiological states in an effort to promote their health and well-being.
Prerequisite: ANEQ 345.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 444   Equine Business Management Credits: 2 (2-0-0)<br>Course Description: Real life<sup>6</sup> equine industry experience and the ins and outs of managing an equine facility/business.<br>Prerequisite: ANEQ 440.<br>Registration Information: Required field trips.<br>Terms Offered: Fall, Summer.<br>Grade Mode: Traditional.<br>Special Course Fee: Yes.<br><br>ANEQ 445   Foaling Management Credits: 2 (1-3-0)<br>Course Description: Management of the foaling mare and newborn foal; monitoring techniques, preventative and emergency care procedures.<br>Prerequisite: ANEQ 344.<br>Registration Information: ANEQ 344 or PVM sophomore standing. Must register for lecture and laboratory.<br>Term Offered: Spring.<br>Grade Mode: Traditional.<br>Special Course Fee: Yes.<br><br>ANEQ 448   Livestock Manure Management and Environment Credits: 3 (2-2-0)<br>Course Description: Manure management; maximizing benefits to soils and crops; minimizing air and water quality hazards; complying with regulations.<br>Prerequisite: CHEM 100 to 199 - at least 3 credits.<br>Registration Information: Credit allowed for only one of the following: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture and laboratory. Required field trips.<br>Term Offered: Fall (even years).<br>Grade Mode: Traditional.<br>Special Course Fee: No.<br><br>ANEQ 450   Processed Meats Credits: 3 (2-3-0)<br>Course Description: Must register for lecture and laboratory.<br>Prerequisite: ANEQ 360.<br>Term Offered: Fall.<br>Prerequisite: ANEQ 360.<br>Grade Mode: Traditional.<br>Special Course Fee: No.<br><br>ANEQ 460   Meat Safety Credits: 2 (2-0-0)<br>Course Description: Meat safety; food borne pathogens; hazard analysis critical control points (HACCP) and total quality management (TQM) practices.<br>Prerequisite: CHEM 100 to 199 - at least 3 credits.<br>Term Offered: Spring.<br>Grade Mode: Traditional.<br>Special Course Fee: No.<br><br>ANEQ 470   Meat Processing Systems Credits: 4 (3-2-0)<br>Course Description: Advanced understanding of the manufacturing, packaging, distribution, storage, and cooking of meat products.<br>Prerequisite: ANEQ 360.<br>Restriction: Must be a: Senior, Senior - Post Bachelor, Senior - Second Bachelor.<br>Registration Information: Senior standing. Must register for lecture and lab.<br>Term Offered: Spring.<br>Grade Mode: Traditional.<br>Special Course Fee: Yes.<br><br>ANEQ 472   Sheep Systems Credits: 3 (2-2-0)<br>Course Description: Sheep production under farm and ranch conditions; products, breeds, breeding, nutrition, reproduction, and management systems.<br>Prerequisite: None.<br>Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.<br>Registration Information: Senior standing. Must register for lecture and laboratory.<br>Term Offered: Spring.<br>Grade Mode: Traditional.<br>Special Course Fee: No.<br><br>ANEQ 473   Dairy Systems Credits: 3 (2-3-0)<br>Course Description: Integration of nutrition, genetics, physiology, and economics for management decisions of dairy farm operations and production and marketing of milk.<br>Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310 and ANEQ 320).<br>Restriction:  .<br>Registration Information: Senior standing. Must register for lecture and laboratory.<br>Term Offered: Fall.<br>Grade Mode: Traditional.<br>Special Course Fee: No.<br><br>ANEQ 474   Swine Systems Credits: 3 (2-2-0)<br>Course Description: Production of purebred and commercial swine; breeds, breeding, feeding, marketing, and management.<br>Prerequisite: None.<br>Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.<br>Registration Information: Senior standing. Must register for lecture and laboratory.<br>Terms Offered: Fall, Spring.<br>Grade Mode: Traditional.<br>Special Course Fee: Yes.<br><br>ANEQ 475   Travel Abroad-Animal Agriculture Credits: 2 (2-0-0)<br>Course Description: Onsite evaluation of international animal agriculture systems with emphasis on production, marketing, and management.<br>Prerequisite: None.<br>Registration Information: Written consent of instructor.<br>Terms Offered: Fall, Spring, Summer.<br>Grade Mode: Traditional.<br>Special Course Fee: No.<br><br>ANEQ 476   Feedlot Systems Credits: 3 (3-0-0)<br>Course Description: Feedlot facilities; nutrition; procurement; merchandising; handling; processing cattle; health care; custom feeding; managerial duties.<br>Prerequisite: ANEQ 320.<br>Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.<br>Registration Information: Senior standing.<br>Term Offered: Spring.<br>Grade Mode: Traditional.<br>Special Course Fee: No.
ANEQ 478 Beef Systems Credits: 3 (2-2-0)
Course Description: Beef production as related to consumer through seedstock segments. Major emphasis on cow-calf management.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 486 Therapeutic Riding Instructor Practicum Credit: 1 (0-3-0)
Course Description: Mentor-guided teaching hours to students preparing for the PATH International Instructor examination.
Prerequisite: ANEQ 365.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

ANEQ 487A Internship: Animal Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 487B Internship: Equine Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 496 Group Study Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits allowed in course. A maximum of 12 credits is allowed for any combination of the following: ANEQ 350A-E, ANEQ 352, ANEQ 353, ANEQ 354, ANEQ 355, ANEQ 356, ANEQ 357, ANEQ 361, ANEQ 362, ANEQ 363, ANEQ 364, ANEQ 384, ANEQ 487, ANEQ 495, and ANEQ 496.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U Sat/Unsat Only, Traditional.
Special Course Fee: No.

ANEQ 500 Recent Developments Credits: Var[1-6] (0-0-0)
Course Description: Recent developments in animal science, avian science, and food technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 510 Bovine Reproduction Management Credits: 4 (3-2-0)
Course Description: Role of reproduction in economic efficiency of cattle production systems. Causes of delayed breeding and nonpregnancy, abortion and perinatal mortality.
Prerequisite: ANEQ 310.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 522 Animal Metabolism Credits: 3 (3-0-0)
Course Description: Nutrient digestion, absorption, transport and metabolism in monogastric and ruminant domestic species as affected by physiological changes.
Prerequisite: CHEM 346 or CHEM 245 and CHEM 246.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 548 Issues in Manure Management Credits: 4 (2-2-1)
Course Description: Manure management practices maximizing benefits to soils and crops while minimizing hazards to air and water quality and complying with regulations.
Prerequisite: CHEM 100 to 199 - at least 3 credits.
Registration Information: Credit allowed for only one of the following courses: ANEQ 448, ANEQ 548, SOCR 448, SOCR 548. Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 550A Basic Research Surgery: Farm Animal Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305.
Registration Information: Junior, senior, or graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 550B  Basic Research Surgery: Rodent  Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305 or VS 333.
Restriction: Must be a: Graduate, Professional.
Registration Information: Junior or senior standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 551  Field Necropsy  Credits: 2 (1-2-0)
Course Description: Field necropsy techniques for collection of animal tissues for submission to a diagnostic laboratory.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (VS 313 or ANEQ 346 or MIP 315 or ANEQ 313).
Restriction: Must be a: Graduate, Professional.
Registration Information: Junior or senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANEQ 565  Interpreting Animal Science Research  Credits: 3 (3-0-0)
Course Description: Designing, conducting, analyzing, and reporting of animal science research.
Prerequisite: (ANEQ 101 or ANEQ 102) and (STAT 100 to 499 - at least 3 credits).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 567  HACCP Meat Safety  Credits: 2 (2-0-0)
Course Description: Control of health problems in meat products through hazard analysis critical control point (HACCP) and total quality management (TQM) practices.
Prerequisite: ANEQ 460.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 567B  Basic Research Surgery: Rodent  Credits: 2 (1-2-0)
Course Description: Basic principles and techniques of animal surgery to meet ACUC requirements for experimental procedures.
Prerequisite: ANEQ 230 or ANEQ 305 or BMS 300 or BMS 305 or VS 333.
Restriction: Must be a: Graduate, Professional.
Registration Information: Junior or senior standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 660  Topics in Meat Safety  Credit: 1 (1-0-0)
Course Description: Topics of current concern in meat safety.
Prerequisite: ANEQ 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANEQ 676  Molecular Approaches to Food Safety  Credits: 3 (1-4-0)
Course Description: Molecular subtyping, tracking, and control; molecular ecology and evolution of food-borne pathogens; molecular pathogenesis of food-borne diseases.
Prerequisite: MIP 300 or MIP 334.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ANEQ 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 720 Nutritional Energetics Credits: 3 (3-0-0)
Course Description: Dietary energy use to meet animal requirements for maintenance, growth, pregnancy, and lactation; environmental, nutritional, and physiological effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.

ANEQ 725 Rumen Metabolism Credits: 3 (3-0-0)
Course Description: Microbial degradation, transformation, and synthesis of ingested nutrients; feed particle passage kinetics in the rumen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.

ANEQ 730 Advances in Cattle Breeding Credits: 3 (3-0-0)
Course Description: Literature and research methods in beef cattle breeding.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANEQ 731 Advanced Genetic Prediction Credits: 3 (3-0-0)
Course Description: Models and methods for prediction of genetic merit in livestock populations.
Prerequisite: ANEQ 575.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.

ANEQ 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANEQ 792A Seminar: General Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

ANEQ 792B Seminar: Breeding/Genetics Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

ANEQ 792C Seminar: Physiology Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

ANEQ 792D Seminar: Meat Sciences Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

ANEQ 792E Seminar: Nutrition Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

ANEQ 792F Seminar: Livestock Management Systems Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

ANEQ 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ANTH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Anthropology-ANTH (ANTH)

Courses

ANTH 100 Introductory Cultural Anthropology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Human societies and their cultural setting; variation in beliefs, social customs, and technologies; human differences in anthropological terms.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ANTH 120 Human Origins and Variation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Mechanisms of evolution; genetics. Living primate biology, behavior, and history. Human evolutionary history. Human variation and adaptation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

ANTH 121 Human Origins and Variation Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Labs demonstrating genetic and evolutionary processes, comparative skeletal anatomy, human evolution through fossil casts, and modern human variation.
Prerequisite: ANTH 120, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

ANTH 140 Introduction to Prehistory (GT-HI1) Credits: 3 (3-0-0)
Course Description: Origins of human society from the Stone Age to urban civilization using architecture, art, tools, and other material remains.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ANTH 200 Cultures and the Global System (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analyze diversity, cultural responses, and adaptations of smaller-scale societies to emerging global trends.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ANTH 235 Indigenous Peoples of North America Credits: 3 (3-0-0)
Course Description: Explores Native groups of North America from an anthropological perspective, and utilizes a culture area framework as a basis for investigation. Culture area framework is largely based on historical material—how these people have lived in the recent past. Evaluating how these groups live in the present. Contemporary issues, globalization, and local responses to local concerns.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both ANTH 235 and ANTH 280A2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 260 Introduction to Field Archaeology Credits: 2 (1-2-0)
Course Description: Field methods including map preparation and interpretation, site location and recording, site excavation, and stratigraphy.
Prerequisite: ANTH 140.
Restriction: Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 275 Introduction to Forensic Anthropology Credits: 3 (3-0-0)
Also Offered As: SOC 275.
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Restriction: Must register for lecture and laboratory.
Registration Information: Credit not allowed for both ANTH 275 and SOC 275. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 310 Peoples and Cultures of Africa Credits: 3 (3-0-0)
Course Description: Sub-Saharan lifestyles including marriage and family, traditional government, religion and magic, ecology and economy, art, music, and literature.
Prerequisite: ANTH 100.
Term Offered: Spring (even years).
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ANTH 312 Modern Indian Culture and Society Credits: 3 (3-0-0)
Course Description: Anthropological contributions to the understanding of contemporary India.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 313 Modernization and Development Credits: 3 (3-0-0)
Course Description: Processes by which cultures change and modernize, 1989 to the present.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 314 Southeast Asian Cultures and Societies Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial cultures, globalization processes, and changing ethnic and gender identities in Southeast Asian societies.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 319 Latin American Peasantries Credits: 3 (3-0-0)
Course Description: Sociocultural, economic, and political responses of Latin American peasantries to poverty and global processes.
Prerequisite: ANTH 100 or ANTH 200 or ETST 100.
Registration Information: Credit not allowed for both ANTH 319 and ETST 319.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 322 The Anthropology of Religion Credits: 3 (3-0-0)
Course Description: Major anthropological theories and descriptions of religious beliefs and practices. Religion in a cross-cultural and evolutionary perspective.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 329 Cultural Change Credits: 3 (3-0-0)
Course Description: Cultural change and effects of directed global forces; colonial origins of underdevelopment on small-scale societies.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 330 Human Ecology Credits: 3 (3-0-0)
Course Description: Roles of technology, economics, social organization, and ideology in human adaptations to and survival in natural and cultural environments.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 120 or BZ 101 or LAND 220 or LIFE 220).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 334 Narrative Traditions and Social Experience Credits: 4 (3-2-0)
Course Description: Relationship between narrative traditions and social contexts of their creation.
Prerequisite: ANTH 100 or ANTH 200 or E 140 or SOC 100.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 335 Language and Culture Credits: 3 (3-0-0)
Course Description: Human language and primate communication, nonverbal channels, sociolinguistics, and language change.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 336 Art and Culture Credits: 3 (3-0-0)
Course Description: Art expression is a defining factor in cultural identity and representation in a modern world where geographical and political borders are diminishing.
Prerequisite: ANTH 100 or ANTH 200.
Restriction: 
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 338 Gender and Anthropology Credits: 3 (3-0-0)
Course Description: Theory, themes, and debates in anthropological gender studies, ethnographic survey of women and men cross-culturally.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 340 Medical Anthropology Credits: 3 (3-0-0)
Course Description: Cultural adaptation to disease; non-Western theories of health and disease; categories, causes, cures; learned roles of patients and healers.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 343 Applied Medical Anthropology Credits: 3 (3-0-0)
Course Description: How and why we get sick and what sickness means from biological, social and cultural perspectives.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 350 Archaeology of North America Credits: 3 (3-0-0)
Course Description: Native American life, tools, architecture, religion, food-getting from cultures of 12,000 years ago or earlier until European contact.
Prerequisite: ANTH 140.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ANTH 351 Archaeology of Europe and Africa Credits: 3 (3-0-0)
Course Description: Human culture, tools, art, religion, social life, subsistence, and paleocology from 4 million B.C. to 1200 B.C. in the Old World.
Prerequisite: ANTH 140.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 352 Geoarchaeology Credits: 3 (3-0-0)
Course Description: Analytical techniques, concepts, and field methodologies from the earth sciences to better understand the archaeological record.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 355 Colorado Prehistory Credits: 3 (2-0-1)
Course Description: Human behavioral responses to environmental diversity, cultural adaptation, Pleistocene and recent climates, anthropogenic environmental change.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 360 Archaeological Investigation Credits: 3 (2-2-0)
Course Description: Investigation of the archaeological record, how the record was formed, and how archaeological data are analyzed and interpreted.
Prerequisite: ANTH 140.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 365 Quantifying Anthropology Credits: 3 (3-0-0)
Course Description: Managing, quantifying and illustrating anthropological data-sets with appropriate software.
Prerequisite: ANTH 100 or ANTH 120 or ANTH 140 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 370 Primate Behavior and Ecology Credits: 3 (3-0-0)
Course Description: Behavioral patterns, ecological relationships, and communication of nonhuman primates.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 372 Human Osteology Credits: 3 (2-2-0)
Course Description: Human bones and teeth in a review of functional human evolution.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 373 Human Evolution Credits: 3 (3-0-0)
Course Description: Current topics and debates in human evolution concentrating on biocultural changes in the human lineage.
Prerequisite: ANTH 120 or BZ 110.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 374 Human Biological Variation Credits: 3 (2-0-1)
Course Description: Biological diversity of human populations; history of development of race concept.
Prerequisite: ANTH 120 or BZ 101 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation.
Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 375 Evolution of Primate Behavior Credits: 3 (3-0-0)
Course Description: Primate behavior from an evolutionary perspective, drawing on a variety of studies of humans, primates, and mammals.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 376 Evolution of Human Adaptation Credits: 3 (2-0-1)
Course Description: Unique characteristics of humans: bipedalism, encephalization, dentition, birth process, an attenuated period of development.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 377 Bipedal Apes Credits: 3 (3-0-0)
Course Description: Human bipedal walking within a comparative framework of primate locomotion and anatomy. Specific focus is on kinematics and kinetics of soft- and hard-tissues including analysis of extant primate locomotion, morphology, and development. Discussions focus on debates in primate functional anatomy and locomotion including hypotheses surrounding the origins and evolution bipedal walking and running and possible maladaptations of being a human biped.
Prerequisite: ANTH 120 or BZ 101.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 400 History of Anthropological Thought Credits: 3 (3-0-0)
Course Description: Anthropological theory from its beginnings in 19th century through recent developments into the 20th century.
Prerequisite: (ANTH 100 or ANTH 200) and (ANTH 140 and ANTH 120 and ANTH 121).
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 411 Indians of South America Credits: 3 (0-0-3)
Course Description: Ethnographic and cultural characteristics of South American indigenous groups and the current critical issues they face.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 412 Indians of North America Credits: 3 (3-0-0)
Course Description: Native American peoples, their cultural variation across the continent, and cultural encounters with colonial expansion.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 413 or ANTH 414 or ETST 414.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 413 Indigenous Peoples Today Credits: 3 (3-0-0)
Course Description: Contemporary cultural and social issues of indigenous peoples around the globe, including North and South American Indians and Australian Aborigines.
Prerequisite: ANTH 200 or ANTH 412 or ANTH 414 or ETST 414.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 414 Development in Indian Country Credits: 3 (3-0-0)
Also Offered As: ETST 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian Country.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 414 and ETST 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 415 Indigenous Ecologies and the Modern World Credits: 3 (3-0-0)
Course Description: Impact of the modern world in indigenous peoples’ relationship to their environments and natural resources.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 416 Gender, Culture, and Health Credits: 3 (3-0-0)
Course Description: Examine the role of anthropology in current global health issues paying particular attention to culture and gender.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 422 Comparative Legal Systems Credits: 3 (3-0-0)
Also Offered As: SOC 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both ANTH 422 and SOC 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 423 Cultural Psychiatry Credits: 3 (3-0-0)
Course Description: Social determinants of mental health. Cross-cultural health and healing. Cultural contexts of U.S./Western and Indigenous/non-Western psychiatries.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 438 Approaches to Community-Based Development Credits: 3 (0-0-3)
Course Description: Explores the structure and practice of community development globally, engaging in critical analysis of different approaches and their impact.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 439 Community Mobilization Credits: 3 (0-0-3)
Course Description: Structural, social, and psychological barriers that inhibit cooperation and collective action.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 440 Theory in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Theoretical paradigms used to explain culture including evolutionary, functional, ecological, political economy, postmodemism, and hegemony.
Prerequisite: ANTH 100 or ANTH 200.
Terms Offered: Fall, Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 441 Method in Cultural Anthropology Credits: 3 (3-0-0)
Course Description: Methodological orientations and research techniques. Ethnographic and cross-cultural approaches including quantitative and formal models.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ANTH 442 Ethnographic Field School Credits: Var[3-8] (0-0-0)
Course Description: Directed fieldwork with American Indian communities; methodology, protocols, and social relations of ethnographic field research.
Prerequisite: ANTH 100 or ANTH 200 or ANTH 100 to 99999 - at least 9 credits.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 443 Ethnographic Field Methods Credits: 3 (0-6-0)
Course Description: Directed experiential preparation for applied ethnographic field methods and research questions.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 444 Cultures of Virtual Worlds--Research Methods Credits: 4 (3-2-0)
Course Description: Methodologies and directed research related to virtual worlds and internet and gaming communities.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Must register for lecture and laboratory. Junior standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 445 Psychological Anthropology Credits: 3 (3-0-0)
Course Description: Cross-cultural exploration of the human mind by studying the ideas, desires, and practices of individuals in various sociocultural settings.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 446 New Orleans and the Caribbean Credits: 3 (3-0-0)
Course Description: New Orleans and the Caribbean connections through colonization, slavery, modernity, legacies of race, gender and class, the expressive arts.
Prerequisite: ANTH 100 or ANTH 200.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 447 Gender Equity in Development Credits: 3 (0-0-3)
Course Description: Various forms of women’s power, and potentials for disempowerment within the context of international development.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 448 Development and Empowerment Credits: 3 (0-0-3)
Course Description: Development as an economic process of wealth accumulation, as well as a socio-political process of empowerment.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 449 Participatory Monitoring and Evaluation Credits: 3 (3-0-0)
Course Description: Participatory methods in the monitoring and evaluation of development projects, where multiple stakeholders are involved in the process.
Prerequisite: ANTH 100 or ANTH 200.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 450 Hunter-Gatherer Ecology Credits: 3 (0-0-3)
Course Description: Development of anthropological method and theory; study of contemporary and prehistoric foraging peoples.
Prerequisite: ANTH 100 and ANTH 120 and ANTH 121 and ANTH 140.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 451 Andean Archaeology and Ethnohistory Credits: 3 (3-0-0)
Course Description: Prehistory and colonial experiences of native Andean peoples.
Prerequisite: ANTH 100 or ANTH 140.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 452 Archaeology of Mesoamerica Credits: 3 (3-0-0)
Course Description: Ancient cultures and civilizations in Middle America.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 453 Impacts on Ancient Environments Credits: 3 (3-0-0)
Course Description: Major issues and case studies in the archaeology of ancient human societies and their environmental impacts.
Prerequisite: ANTH 140.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 454 Anthropological Perspectives on Food Credits: 3 (3-0-0)
Course Description: A long term perspective on the political economy of human food ways from ancient hunter-gatherers to the present. Topics will include foraging practices, domestication, feasting and emergent social complexity, the role of food in ancient states, and globalization, as well as the modern food economy. Lectures and readings will be based on research in archaeology, cultural anthropology, and biological anthropology.
Prerequisite: ANTH 100 and ANTH 120 or ANTH 100 and ANTH 140 or ANTH 200 or ANTH 120 and ANTH 140 or ANTH 120 and ANTH 200 or ANTH 140 and ANTH 200.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 455 Great Plains Archaeology Credits: 3 (3-0-0)
Course Description: Prehistoric people on Great Plains from earliest hunter-gatherers to historic contact; cultural responses to changing conditions.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ANTH 456 Archaeology and the Public Credits: 3 (3-0-0)
Course Description: Applied archaeology in public settings, including publication, museum display, education, the illicit artifact trade, and other ethical issues.
Prerequisite: ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 457 Lithic Technology Credits: 3 (2-2-0)
Course Description: Method and theory behind production, use, and discard of stone tools by prehistoric peoples. Hands-on application in laboratory setting.
Prerequisite: ANTH 140.
Registration Information: Written consent of instructor. Required field trips.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 460 Field Class in Archaeology Credits: Var[3-8] (0-0-0)
Course Description: Directed fieldwork in local archaeology, site survey, and excavation; recovery, preservation, cataloging, analysis of artifactual and skeletal materials.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 461 Anthropolological Report Preparation Credits: 3 (0-0-3)
Course Description: Producing written and oral presentations for anthropological research, employment, or graduate work. Grant writing and manuscript preparation.
Prerequisite: ANTH 460.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 465 Zooarchaeology Credits: 3 (2-2-0)
Course Description: Analysis of animal bones from archaeological sites to develop interpretations of past human behavior.
Prerequisite: ANTH 120 and ANTH 140.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

ANTH 469 Archaeology Seminar in Mesopotamian Prehistory Credits: 3 (0-0-3)
Course Description: Origins of human society from the stone age to urban civilizations using architecture, art, tools, and other material remains.
Prerequisite: ANTH 100 to 99999 - at least 6 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 470 Paleontology Field School Credits: 4 (2-4-0)
Course Description: Field methods in fossil excavation, preservation, and curation; the evolution of the primate order.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ANTH 471 The Neandertals Credits: 3 (2-0-1)
Course Description: Socio-historical foundations of questions regarding Neandertal paleobiology and culture and the Neandertal role in the evolution of Homo sapiens.
Prerequisite: ANTH 120 or BZ 110 and (ANTH 372 or ANTH 373 or ANTH 374 or ANTH 375 or ANTH 376).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 472 Human Biology Credits: 3 (3-0-0)
Course Description: Human biological responses to environmental conditions and constraints including diet, nutrition, disease, climate, culture change, and urbanization.
Prerequisite: ANTH 120 or BZ 110 or LIFE 102.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 473 Methods of Analysis in Paleoanthropology Credits: 3 (3-0-0)
Course Description: Practical discussion of techniques used to reconstruct dietary and locomotor behavior and evolutionary relationships in human fossil remains.
Prerequisite: ANTH 373.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 474 Heritage Resource Management Credits: 3 (3-0-0)
Also Offered As: HIST 478.
Course Description: Cultural resource laws and policy; practices commonly employed in management and preservation of these diverse resources.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Credit not allowed for both ANTH 478 and HIST 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 475 Paleoclimatology Credits: 3 (3-0-0)
Course Description: Contemporary issues in international community and economic development, with practical and theoretical analysis from interdisciplinary perspectives.
Prerequisite: None.
Restriction: Must be a: Junior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 479 and IE 479.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 496  Group Study  Credits: Var[1-3] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ANTH 495  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 496  Group Study  Credits: Var[1-3] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 496  Group Study  Credits: Var[1-3] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ANTH 532 The Culture of Disaster  Credits: 3 (0-0-3)
Course Description: Study of how the human impacts of disaster and the process of recovery are shaped by cultural as well as structural realities.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 535 Globalization and Culture Change  Credits: 3 (0-0-3)
Course Description: Evolving paradigms and patterns of globalization and international development; cultural responses – resistance, dependency, fragmented identities.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 539 Anthropology of Modernity  Credits: 3 (3-0-0)
Course Description: Critical examination of the institutions, values, and processes which constitute the modern world. Impact of modern forces on "traditional" peoples.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 540 Medical Anthropology  Credits: 3 (0-0-3)
Course Description: Cultural and biocultural approaches to health, illness, and the body; theory and application in medical anthropology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 541 Seminar in Archaeological Method  Credits: 3 (1-0-2)
Course Description: Methods of archaeological recovery and interpretation, and process of archaeological analysis and reporting.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 542 Seminar in Archaeological Theory  Credits: 3 (1-0-2)
Course Description: Theories of recovery, reconstruction, and interpretation of the archaeological record.
Prerequisite: ANTH - at least 9 credits.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 544 From Death to Discovery  Credits: 3 (1-0-2)
Course Description: Theoretical perspectives on the decay and fossilization of organisms between their death and discovery.
Prerequisite: ANTH 000 to 99999 - at least 9 credits.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ANTH 545 Global Mental Health--Theory and Method  Credits: 4 (3-2-0)
Course Description: Cross-cultural study of mental health and healing; cultural, clinical, and biological perspectives; integration of theory and method.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Graduate standing. Undergraduates must have written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 546 Culture, Mind, and Cognitive Science  Credits: 3 (3-0-0)
Course Description: Anthropological contributions to cognitive science. Culture, mind, and social context. Theory building and practical applications.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 547 Mind, Medicine, and Culture  Credits: 4 (3-2-0)
Course Description: Cultural-psychological influences on health and healing; mind-body medicine; complementary and alternative medicine; indigenous and spiritual healing.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550A Regional Prehistory: Great Plains  Credits: 3 (0-0-3)
Course Description: Theory, methods, and issues in historical archaeology.
Prerequisite: ANTH 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550B Regional Prehistory: Great Basin  Credits: 3 (0-0-3)
Course Description: Theory, methods, and issues in historical archaeology.
Prerequisite: ANTH 350.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 550C Regional Prehistory: Southwestern  Credits: 3 (0-0-3)
Course Description: Theory, methods, and issues in historical archaeology.
Prerequisite: ANTH - at least 9 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 551 Historical Archaeology  Credits: 3 (3-0-0)
Course Description: Theory, methods, and issues in historical archaeology.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ANTH 553 Archaeology of Complex Societies Credits: 3 (0-0-3)
Course Description: Issues in development and organization of complex societies with emphasis on the Americas.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 554 Ecological and Social Agent-based Modeling Credits: 3 (2-2-0)
Also Offered As: NR 554.
Course Description: Exploring the use and making of agent-based models featuring interacting individuals in ecological and social simulation, with examples and projects.
Prerequisite: None.
Restriction: Must not be a: Freshman, Freshman, Sophomore, Sophomore.
Registration Information: Junior or senior standing. Credit not allowed for both ANTH 554 and NR 554.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 555 Paleoindian Archaeology Credits: 3 (0-0-3)
Course Description: Archaeology of the Americas during late Pleistocene/early Holocene; background and development of contemporary models.
Prerequisite: ANTH 140.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 556 Field Methods Training in Online Environments Credits: 3 (2-2-0)
Course Description: Collaborative analysis of ethnographic field data collected in online virtual worlds; mixed methods applicable to other built and natural places.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 570 Contemporary Issues-Biological Anthropology Credits: 3 (0-0-3)
Course Description: Theory and applications in biological anthropology focusing on syntheses and interpretations of human biology, variation, adaptability, and evolution.
Prerequisite: None.
Registration Information: Six credits in biological anthropology.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 571 Anthropology and Global Health Credits: 3 (3-0-0)
Course Description: Global health concerns and problems including poverty, urbanization, malnutrition, diet, war and refugees, climate, and environment.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 572 Human Origins Credits: 3 (0-0-3)
Course Description: Major trends in human evolution through use of detailed case studies and regionally focused primary research.
Prerequisite: None.
Restriction: Must not be a: Undergraduate.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ANTH 573 Paleoclimate and Human Evolution Credits: 3 (3-0-0)
Course Description: Methods used to reconstruct past environments and understand the effects of past climate on the major trends of human evolution.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring (odd years).
Graduate standing.
Special Course Fee: No.

ANTH 574 Advanced Ethnographic Field Methods Credits: 4 (3-2-0)
Course Description: Mixed qualitative and quantitative field methods to address practical real-world problems. Applied, public, collaborative, participatory, and community-based ethnographic research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Graduate standing.
Special Course Fee: No.

ANTH 643 Advanced Ethnographic Field Methods Credits: 4 (3-2-0)
Course Description: Field applications of nondestructive survey methods, advanced cartographic and excavation methods, project supervision skills.
Prerequisite: ANTH 460.
Restriction: Must be a: Graduate, Professional.
Registration Information: Two seasons of field experience may substitute for ANTH 460. Required field trips.
Terms Offered: Fall, Summer.
Graduate standing.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 650 Field Archaeology Credits: Var[2-10] (0-0-0)
Course Description: Field applications of nondestructive survey methods, advanced cartographic and excavation methods, project supervision skills.
Prerequisite: ANTH 460.
Restriction: Must be a: Graduate, Professional.
Registration Information: Two seasons of field experience may substitute for ANTH 460. Required field trips.
Terms Offered: Fall, Summer.
Graduate standing.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ANTH 679 Applications of International Development Credits: 3 (3-0-0)
Also Offered As: IE 679.
Course Description: In-depth interdisciplinary analysis of theoretical and practical issues in implementing economic and community-based international development programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Credit not allowed for both ANTH 679 and IE 679.
Terms Offered: Fall, Spring (odd years).
Graduate standing.
Special Course Fee: No.

ANTH 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Major trends in human evolution through use of detailed case studies and regionally focused primary research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Graduate standing.
Special Course Fee: No.
ANTH 686 Practicum-Field Archaeology  Credits: Var[1-18] (0-0-0)
Course Description: Direction of anthropological fieldwork under professional supervision.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 692 Seminar  Credits: 3 (0-0-3)
Course Description: Current trends of research in archaeology; cultural and physical anthropology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 695 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: Intensive analysis of selected topics and theories in anthropology, both historical and contemporary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ANTH 696 Group Study-Anthropological Theory  Credits: Var[1-3] (0-0-0)
Course Description: Impact of elements and principles of design on apparel and merchandising within 20th century art.
Prerequisite: None.
Restriction: Acceptance into Apparel Design and Production program concentration required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 101 Fashion Industries  Credits: 3 (3-0-0)
Course Description: Development, organization, and trends of domestic and foreign fashion industries.
Prerequisite: None.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 110 Apparel and Merchandising Digital Technology  Credits: 3 (2-2-0)
Course Description: Introduction to computer technologies used in apparel and merchandising industries.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 130 Design Foundation-Apparel and Merchandising  Credits: 3 (3-0-0)
Course Description: Impact of elements and principles of design on apparel and merchandising within 20th century art.
Prerequisite: None.
Restriction: Acceptance into Apparel Design and Production program concentration required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 143 Introduction to Apparel Design  Credits: 4 (2-4-0)
Course Description: Apparel and garment-pattern development, construction, quality, skill development in technical drawing and rendering.
Prerequisite: None.
Restriction: Acceptance into Apparel Design and Production program concentration required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 240 Computer-Aided Apparel Design  Credits: 3 (0-6-0)
Course Description: Apparel design using the computer to generate drawings for fabric, graphic logo, and apparel.
Prerequisite: AM 143.
Restriction: Portfolio review required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 241 Apparel Production  Credits: 3 (1-4-0)
Course Description: Production processes of sewn textile products, flat pattern, pattern grading, marker making, and writing specifications.
Prerequisite: (AM 143) and (MATH 117) and (MATH 118) and (MATH 124, may be taken concurrently).
Restriction: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 243 Adobe Photoshop for Textile Design  Credits: 3 (3-0-0)
Course Description: Textile design using Adobe Photoshop to generate drawings for surface and structural textile design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 244 Illustration for Apparel Design  Credits: 3 (1-4-0)
Course Description: Illustration skills using traditional media/CAD applications and analysis of visual communication.
Prerequisite: AM 143.
Restriction: Portfolio review required. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
AM 250 Clothing, Adornment and Human Behavior (GT-SS3) Credits: 3 (3-0-0)
Course Description: Psychological, sociological and cultural factors influencing clothing and adornment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

AM 270 Merchandising Processes Credits: 3 (3-0-0)
Course Description: Forecasting, planning, evaluating, and presenting merchandise lines to meet target market demands.
Prerequisite: (AM 101 with a minimum grade of C and AM 130 with a minimum grade of C and DM 120 with a minimum grade of C) and (MATH 124).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 275 Product Development I Credits: 3 (3-0-0)
Course Description: Fundamental techniques and skills applied to the development of apparel and textile products.
Prerequisite: AM 101 with a minimum grade of C and AM 110 and AM 130 with a minimum grade of C and MATH 124.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 290 Workshop Credits: Var[1-18] (0-0-0)
Course Description: Offered as an online course only.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 321 Advanced Textiles Credits: 3 (3-0-0)
Course Description: Textile product serviceability; effect of fiber structure on properties and performance; new developments.
Prerequisite: DM 120.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 330 Textile and Apparel Economics Credits: 3 (3-0-0)
Course Description: Manufacture of textile and apparel products; structure of the industries; international trade and consumption.
Prerequisite: (AM 270 with a minimum grade of C and DM 272 with a minimum grade of C) and (AREC 202 with a minimum grade of C or ECON 202 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 335 Textiles and Apparel Supply Chains Credits: 3 (3-0-0)
Course Description: Managing the flow of materials, information, and finances as they move in a process from supplier to retailers and consumers in a global environment.
Prerequisite: AM 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 341 Computer-Aided Apparel Production Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading, and marker making.
Prerequisite: AM 241.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 342 Computer-Aided Textile Design Credits: 3 (0-6-0)
Course Description: Computer-aided technology and multicultural research used to create repeat fabric design; fabric printing using silkscreen.
Prerequisite: AM 110.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 344 Adobe Illustrator for Apparel Design Credits: 3 (0-0-3)
Course Description: Apparel design using Adobe Illustrator to generate drawings for garment technical sketching, fashion illustration, and graphic logos.
Prerequisite: AM 243, may be taken concurrently.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 345 Draping Design Credits: 3 (0-6-0)
Course Description: Apparel designing through basic draping techniques.
Prerequisite: AM 241.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 363 Historic Costume Credits: 3 (3-0-0)
Course Description: Influence of social, political, and economic conditions on costume of predynastic Egypt to present time.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 364 History of Fashion Designers/Manufacturers Credits: 3 (0-0-3)
Course Description: Fashion designers and manufacturers who established the field and their contemporaries.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AM 366 Merchandising Promotion Credits: 3 (3-0-0)
Course Description: Activities used to influence sale of merchandise and services; to promote trends and ideas.
Prerequisite: AM 270 or MKT 300 or MKT 305.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
AM 370 Fashion Trend Analysis and Forecasting Credits: 3 (3-0-0)
Course Description: Fashion trend analysis and forecasting between markets and products; the direction of fashion.
Prerequisite: AM 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 371 Merchandising Systems Credits: 4 (3-2-0)
Course Description: Business mathematics and current practices related to acquisition, negotiation, distribution, and sale of merchandise.
Prerequisite: (ACT 205 or ACT 210) and (AM 270 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 375 Product Development II Credits: 3 (2-2-0)
Course Description: Product design and development for apparel and other soft goods through industry-driven projects.
Prerequisite: DM 272 with a minimum grade of C and AM 270 with a minimum grade of C and AM 275.
Registration Information: Must register for lecture and lab. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 421 Textiles Product Quality Assessment Credits: 3 (2-2-0)
Course Description: Role of quality assurance in product development, production, performance, and user satisfaction with sewn products and the textile and other components of those products.
Prerequisite: DM 120.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 430 International Retailing Credits: 3 (3-0-0)
Course Description: Application of retail principles to analyze the internationalization process of retailing.
Prerequisite: AM 330 and DM 360 or MKT 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 446 Apparel Design and Production Credits: 3 (1-4-0)
Course Description: Computer-aided design technology used in apparel sketching, pattern drafting, grading and marker making; final portfolio preparation and review.
Prerequisite: AM 341 and AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 450 Social-Psychological Aspects of Clothing Credits: 3 (3-0-0)
Course Description: Psychological and social factors influencing clothing and its effect on others.
Prerequisite: AM 250 and PSY 100 or SOC 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 460 Historic Textiles Credits: 3 (3-0-0)
Course Description: Historic development of textiles from a global perspective, focusing on textiles produced by diverse cultures.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 466 Retail Environment Design and Planning Credits: 3 (2-2-0)
Course Description: Application of design/merchandising principles to retail selling environments, including traditional store design/layout, direct mail, and websites.
Prerequisite: AM 130 and AM 270.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 475 Product Development III Credits: 3 (3-0-0)
Course Description: Technology-based product innovation for positive social and environmental impacts.
Prerequisite: AM 335 and AM 375.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 479 Merchandising Policies and Strategies Credits: 3 (3-0-0)
Course Description: Examination of merchandising environment as influenced by its structure, and economic, legal, demographic, and psychographic trends.
Prerequisite: (AM 270 and AM 330 and AM 366 and AM 371) and (DM 360 or MKT 360).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AM 495A Independent Study: Merchandising Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495B Independent Study: Apparel Design and Production Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 495D Independent Study: Textiles and Clothing Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
AM 496A Group Study: Merchandising Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496B Group Study: Apparel Design Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496C Group Study: Apparel Production Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 496D Group Study: Textiles and Clothing Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AM 500 Apparel Supply Chains/Social Responsibility Credit: 1 (1-0-0)
Course Description: Challenges for social responsibility in the context
of the structure, relationships, and long-standing practice of the apparel
industry.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AM 525 Application of Textile Technology to Design Credits: 3 (1-2-1)
Course Description: Advanced study of textile technology in apparel,
merchandising and interior design; recent advances in the field.
Prerequisite: AM 321 or AM 421.
Registration Information: Must register for lecture, laboratory, and
recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 546 Theoretical Apparel Design Credits: 3 (1-2-1)
Course Description: Applications of theoretical frameworks and
computer-aided design techniques for the development of wearable and
fiber art.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and
recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

AM 550 Appearance, Self, and Society Credits: 3 (0-0-3)
Course Description: Analysis of social science theories and concepts as
they apply to appearance and dress research.
Prerequisite: AM 450 or PSY 000 to 9999 - at least 6 credits or SOC 000 to
9999 - at least 6 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 572 Merchandising Theories and Strategies Credits: 3 (0-0-3)
Course Description: Theoretical perspective on the design and
development of merchandising strategies for U.S. and global production,
distribution, and consumption.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing or written consent of
instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AM 590B Workshop: Apparel Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Applied Human Sciences-AHS (AHS)

Courses
AHS 487 Internship in Human Services Credits: Var[1-16] (0-0-0)
Course Description: Application of skills learned in interdisciplinary
program or major to a variety of human service settings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AHS 490 Workshop Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AHS 692 Seminar Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AHS 695 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Applied Statistics-STAA (STAA)
Courses

STAA 551  Regression Models and Applications  Credits: 2 (2-0-0)
Course Description: Estimation/hypothesis testing methods: t-tests, ANOVA, regression, residual analyses, transformations, goodness of fit, interactions, confounding.
Prerequisite: None.
Registration Information: Admission to the M.A.S. program. Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 552  Generalized Regression Models  Credits: 2 (2-0-0)
Course Description: Nonlinear regression, iteratively reweighted least squares, dose-response models, count data, multi-way tables, survival analysis.
Prerequisite: STAA 551, may be taken concurrently or STAT 540.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 553  Experimental Design  Credits: 2 (2-0-0)
Course Description: Design/analysis of experiments. Emphasis on balanced design; use of computing packages SAS and R. Example-based presentation, rather than theoretical.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 554  Mixed Models  Credits: 2 (2-0-0)
Course Description: Topics in linear, generalized linear, and nonlinear models with fixed and random predictors, balanced and unbalanced cases.
Prerequisite: STAA 553, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 556  Statistical Consulting  Credits: 3 (3-0-0)
Course Description: Effective consulting to meet with clients, analyze real data, and prepare reports.
Prerequisite: STAA 500 to 599 - at least 28 credits.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 561  Probability with Applications  Credits: 2 (2-0-0)
Course Description: Random variables, continuous and discrete distributions, expectations, joint and conditional distributions, transformations.
Prerequisite: None.
Registration Information: Admission to the M.A.S. program. Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 562  Mathematical Statistics with Applications  Credits: 2 (2-0-0)
Course Description: Theory and applications of estimations, testing, and confidence intervals. Computer simulations, sampling from the normal distribution.
Prerequisite: STAA 561, may be taken concurrently or STAT 520.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 565  Quantitative Reasoning  Credit: 1 (1-0-0)
Course Description: Confounding, types of bias such as selection bias and regression effect bias, Simpson's paradox, experiments versus observational studies.
Prerequisite: STAA 551, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 566  Computational and Graphical Methods  Credit: 1 (1-0-0)
Course Description: Exploratory data analysis using graphics, effective communication with graphs, data reduction methods.
Prerequisite: None.
Registration Information: Admission to M.A.S. program. Written consent of instructor. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 567  Computational and Simulation Methods  Credit: 1 (1-0-0)
Course Description: Methods to estimate probability distribution of nonstandard test statistics, find estimators, test hypotheses, and compute confidence intervals.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540) and (STAA 561, may be taken concurrently or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 568  Topics Industrial/Organizational Statistics  Credit: 1 (1-0-0)
Course Description: Quality management, process control, reliability, decision making.
Prerequisite: (STAA 553, may be taken concurrently) and (STAA 561 or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 571  Survey Statistics  Credits: 2 (2-0-0)
Course Description: Survey design, simple random, stratified, and cluster samples. Estimation and variance estimation.
Prerequisite: (STAA 551 or STAT 540) and (STAA 562 or STAT 530).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
STAA 572  Nonparametric Methods  Credits: 2 (2-0-0)
Course Description: Rank-based methods, nonparametric inferential techniques, scatterplot smoothing, nonparametric function estimation, environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540) and (STAA 562, may be taken concurrently or STAT 530).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 573  Analysis of Time Series  Credits: 2 (2-0-0)
Course Description: Moving average and auto-regression correlation structures, estimation and forecasting, modeling seasonality. Financial and environmental applications.
Prerequisite: (STAA 551, may be taken concurrently or STAT 540) and (STAA 561, may be taken concurrently or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 574  Methods in Multivariate Analysis  Credits: 2 (2-0-0)
Course Description: Multivariate ANOVA, principal components, factor analysis, cluster analysis, discrimination analysis.
Prerequisite: None.
Registration Information: Must have concurrent registration in STAA 551; must have concurrent registration in STAA 561. Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 575  Applied Bayesian Statistics  Credits: 2 (2-0-0)
Course Description: Bayesian analysis of statistical models, prior and posterior distributions, computing methods, interpretation.
Prerequisite: (STAA 552) and (STAA 562 or STAT 530) and (STAA 567).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 576  Methods in Environmental Statistics  Credits: 2 (2-0-0)
Course Description: Statistical methodologies used in environmental/ ecological studies. Topics in spatial statistics, abundance estimation for biological populations.
Prerequisite: (STAA 552) and (STAA 561 or STAT 520).
Registration Information: Written consent of instructor. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAA 577  Statistical Learning and Data Mining  Credits: 2 (2-0-0)
Course Description: Applications-oriented overview into how to use statistical methods to do data mining, inference, and prediction.
Prerequisite: None.
Registration Information: Must have concurrent registration in STAA 551; must have concurrent registration in STAA 561. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Art-Art (ART)

Courses
ART 100  Introduction to the Visual Arts (GT-AH1)  Credits: 3 (3-0-0)
Course Description: Exploration of the development of visual arts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

ART 105  Issues and Practices in Art  Credit: 1 (1-0-0)
Course Description: Current issues, practices, and resources in the visual arts; integration of unified vocabulary in various art disciplines.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 110  Art History I  Credits: 3 (3-0-0)
Course Description: The arts of ancient cultures and civilizations.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 111  Art History II  Credits: 3 (3-0-0)
Course Description: Medieval through early modern art history.
Prerequisite: ART 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 135  Introduction to Drawing  Credits: 3 (0-6-0)
Course Description: Elements of artistic freehand drawing emphasizing experimentation with wide variety of media.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 136  Introduction to Figure Drawing  Credits: 3 (0-6-0)
Course Description: Human form as basis for self-expression through various drawing media.
Prerequisite: ART 135.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
ART 160 Two-Dimensional Visual Fundamentals Credits: 3 (0-6-0)
Course Description: Concepts of organization and color theory structure for understanding and manipulation of two-dimensional space.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 170 Three-Dimensional Visual Fundamentals Credits: 3 (0-6-0)
Course Description: Understanding and manipulating three-dimensional form and space; use of materials and tools.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 212 Art History III Credits: 3 (3-0-0)
Course Description: Modern to contemporary art history.
Prerequisite: ART 111.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 230 Photo Image Making I Credits: 3 (0-6-0)
Course Description: Photographic imagery as an art medium; exploration of silver-based (film) materials.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 235 Intermediate Drawing I Credits: 3 (0-6-0)
Course Description: Drawing using models and various still life material.
Prerequisite: ART 136.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 240 Pottery I Credits: 3 (0-6-0)
Course Description: Basic techniques of studio ceramics and wheel throwing; exploration of expressive potential in pottery.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 245 Metalsmithing and Jewelry I Credits: 3 (0-6-0)
Course Description: Basic metal techniques; forming and construction; surface treatment and finishing processes; behavior and mechanical properties of metals.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 250 Fibers I Credits: 3 (0-6-0)
Course Description: Fibers and fabric as expressive media; weaving and basic fiber structures; fabric painting and surface techniques.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 255 Introduction to Graphic Design Credits: 3 (0-6-0)
Course Description: Problems emphasizing typography, layout, symbols, illustration, and package design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Registration Information: 2.55 GPA or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 256 Introduction to Electronic Art Credits: 3 (0-6-0)
Course Description: Introduction to digital media and internet-based design.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 260 Painting I Credits: 3 (0-6-0)
Course Description: Basic oil painting procedures, techniques, and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 265 Printmaking I-Intaglio and Relief Credits: 3 (0-6-0)
Course Description: Problems in composition utilizing basic techniques and principles of printmaking processes.
Prerequisite: (ART 110 and ART 135) and (ART 160 or ART 170).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 270 Sculpture I Credits: 3 (0-6-0)
Course Description: Introduction to sculptural techniques and concepts.
Prerequisite: ART 111 and ART 136 and ART 160 and ART 170.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 295A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
ART 295D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 295F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 295K Independent Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 310 History of American Art to 1945 Credits: 3 (3-0-0)
Course Description: American art from 17th century to 1945.
Prerequisite: ART 212.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 311 Art of Africa Credits: 3 (3-0-0)
Course Description: History of the art of Africa.
Prerequisite: ART 212.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 312 History of Pre-Columbian Art Credits: 3 (3-0-0)
Course Description: History of the art of Central and South America.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 314 Women in Art History Credits: 3 (3-0-0)
Course Description: Women as artists in history of art and women’s media in art.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 315 United States Art 1945-1980 Credits: 3 (3-0-0)
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 316 Art of the Pacific Credits: 3 (3-0-0)
Course Description: Arts of Australia, Indonesia, Melanesia, Micronesia, and Polynesia.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 317 Native North American Art Credits: 3 (3-0-0)
Course Description: Introduction to historic and contemporary art forms of Native North America, emphasizing the cultural and political contexts.
Prerequisite: ART 212.
Registration Information: Written consent of instructor for non-Art majors.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 318 Travel Abroad: Studio Workshop in Italy-Drawing Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 135.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 319 Travel Abroad: Studio Workshop in Italy-Photo Image Making Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 230.
Registration Information: ART 230 or portfolio review; written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ART 321C Travel Abroad: Studio Workshop in Italy-Fibers Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 255.
Registration Information: ART 255 or portfolio review; instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 321D Travel Abroad: Studio Workshop in Italy-Sculpture Credits: Var[3-5] (0-0-0)
Course Description: Exploration of studio techniques in Italy.
Prerequisite: ART 270.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 325 Concepts in Art Education Credits: 3 (3-0-0)
Course Description: Artistic learning in children, adolescents, adults, and special populations.
Prerequisite: EDUC 275.
Registration Information: Admission to Teacher Licensure Program required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 326 Art Education Studio Credits: 4 (0-8-0)
Course Description: Art areas required for teacher licensure as indicated by individual student needs.
Prerequisite: None.
Registration Information: Junior or senior standing; admission to Teacher Licensure Program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 330 Photo Image Making II Credits: 4 (0-8-0)
Course Description: Studio course designed to develop the growth of photographic expression.
Prerequisite: ART 230.
Registration Information: ART 230 or portfolio review.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 331 Photo Image Making III Credits: 4 (0-8-0)
Course Description: Studio course designed to further growth of concept, materials in photographic expression as an art medium.
Prerequisite: ART 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 335 Intermediate Drawing II Credits: 4 (0-8-0)
Course Description: Assigned and independent drawing projects; use of traditional and non-traditional materials.
Prerequisite: ART 235.
Registration Information: May be taken 3 times for credit.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 336 Intermediate Drawing III Credits: 4 (0-8-0)
Course Description: Assigned and independent drawing projects; art theory and criticism; readings and written assignments.
Prerequisite: ART 335.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 340 Pottery II Credits: 4 (0-8-0)
Course Description: Studio ceramic and wheel throwing techniques; surface treatment, kiln firing, clay and glaze formulation.
Prerequisite: ART 240.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 341 Pottery III Credits: 4 (0-8-0)
Course Description: Form and surface exploration; supportive ceramic technologies; expression in historical pottery.
Prerequisite: ART 340.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 345 Metalsmithing and Jewelry II Credits: 4 (0-8-0)
Course Description: Raising and casting techniques in combination with construction; metal spinning.
Prerequisite: ART 245.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 346 Metalsmithing and Jewelry III Credits: 4 (0-8-0)
Course Description: Forging and enameling techniques on nonferrous and ferrous metals; stone setting.
Prerequisite: ART 245.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 350 Fibers II Credits: 4 (0-8-0)
Course Description: Intermediate fiber structures and fabric and surface design; dyes and pigments; continued investigation of fibers and fabric as expressive media.
Prerequisite: ART 250.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 351 Fibers III Credits: 4 (0-8-0)
Course Description: Investigation of fibers and fabric as expressive media; research in historic textiles.
Prerequisite: ART 250.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 355 Typography and Design Systems Credits: 4 (0-8-0)
Course Description: Emphasis on typographic solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 255.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
ART 356 Illustration Credits: 4 (0-8-0)
Course Description: Problems emphasizing media, experimental techniques, and compositions.
Prerequisite: ART 255.
Registration Information: Six credits in drawing required in addition to ART 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 357 Interactive Media Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 358 Experimental Video Credits: 4 (0-8-0)
Course Description: History, theory, application of experimental video and digital special effects, animation and video techniques as they apply to experimental video.
Prerequisite: ART 255 or ART 256.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 360 Painting Methods and Materials Credits: 4 (0-8-0)
Course Description: Experimentation with the painting process in relationship to method, material and tools.
Prerequisite: ART 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 361 Figure Painting Credits: 4 (0-8-0)
Course Description: Composition and techniques in oil and/or acrylic emphasizing the human figure.
Prerequisite: ART 235 and ART 260.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 365 Printmaking II-Lithography Credits: 4 (0-8-0)
Course Description: Preparation, processing, and printing techniques in stone and metal plate lithography.
Prerequisite: ART 136.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 366 Printmaking III-Studio Workshop Credits: 4 (0-8-0)
Course Description: Advanced intaglio, relief, planographic, and stencil processes in the workshop, continued emphasis on individual creative growth.
Prerequisite: ART 365.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 370 Sculpture II Credits: 4 (0-8-0)
Course Description: Intermediate-level exploration of materials, concepts, process, and outcomes rooted in the sculpture area.
Prerequisite: ART 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 371 Sculpture III Credits: 4 (0-8-0)
Course Description: Intermediate-level development of studio practice, exploration of technical process, theory and professionalism.
Prerequisite: ART 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 384 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Junior or senior standing; written consent of instructor. Maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 392 Undergraduate Professional Practices Seminar Credits: 3 (0-0-3)
Course Description: Skills and tools beneficial in pursuing professional and/or academic goals in the visual arts.
Prerequisite: None.
Registration Information: In addition to ART 212, the following are required: 6 credits from ART 135, ART 136, ART 160, ART 170; 60 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 410 Greek Art Credits: 3 (3-0-0)
Course Description: Aegean and Greek architecture, painting, and sculpture.
Prerequisite: ART 212.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 411 History of Medieval Art Credits: 3 (3-0-0)
Course Description: Early Christian, Byzantine, Islamic, Romanesque, and Gothic visual art forms.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 412 History of Renaissance Art Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and minor arts, 1300 to 1600.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ART 414 History of Baroque and Rococo Art  Credits: 3 (3-0-0)
Course Description: 17th- and 18th-century visual arts.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 415 History of 19th Century European Art  Credits: 3 (3-0-0)
Course Description: Architecture, sculpture, painting, and other arts in Europe, 1780 - 1900.
Prerequisite: ART 212.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 416 History of European Art, 1900 to 1945  Credits: 3 (3-0-0)
Course Description: Visual arts in Europe, 1900 to 1945.
Prerequisite: ART 212.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 417 Roman Art  Credits: 3 (3-0-0)
Course Description: Roman sculpture, painting, and architecture.
Prerequisite: ART 212.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 418 Contemporary Artists and Art Critics  Credits: 3 (3-0-0)
Course Description: Critical study of contemporary artists and art criticism.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 419 Historiography and Methodology of Art History  Credits: 3 (3-0-0)
Course Description: Historiography/methodology/research methods in art history.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 420 Travel Abroad-Art History in Italy  Credits: Var[3-5] (0-0-0)
Course Description: Art historical study of painting, sculpture, and architecture in Italy.
Prerequisite: ART 212.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 430 Advanced Photo Image Making I  Credits: 4 (0-8-0)
Course Description: Advanced problems in use of photo image making as an art medium.
Prerequisite: ART 331.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 431 Advanced Photo Image Making II  Credits: 4 (0-8-0)
Course Description: Studio course to refine individual directions and professional goals in photography as an art medium.
Prerequisite: ART 430.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 435 Advanced Drawing I  Credits: 4 (0-8-0)
Course Description: Independent projects and identification of personal artistic direction; research in art-related topics.
Prerequisite: ART 336.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 436 Advanced Drawing II  Credits: 4 (0-8-0)
Course Description: Capstone course; production of professional exhibition-quality work.
Prerequisite: ART 435.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 440 Pottery IV  Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression; supportive technology; expression in contemporary American pottery.
Prerequisite: ART 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 441 Pottery V  Credits: 4 (0-8-0)
Course Description: Advanced individual research in pottery form and expression of personal subject matter; supportive technology.
Prerequisite: ART 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 445 Metalsmithing and Jewelry IV  Credits: 4 (0-8-0)
Course Description: Chasing and repousse techniques in two- and three-dimension; inlay, engraving, and etching techniques.
Prerequisite: ART 345 and ART 346.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 446 Metalsmithing and Jewelry V  Credits: 4 (0-8-0)
Course Description: Advanced techniques: granulation, electroforming, photoetching, makume, niello, ferrous metals techniques.
Prerequisite: ART 345 and ART 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 450 Fibers IV  Credits: 4 (0-8-0)
Course Description: Advanced studio problems in expressive use of fibers and fabric.
Prerequisite: ART 350 and ART 351.
Registration Information: Maximum of 8 credits allowed in the course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
ART 451  Fibers V  Credits: 4 (0-8-0)
Course Description: Advanced studio problems in expressive use of fibers and fabric.
Prerequisite: ART 351 or ART 450.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 455  Advanced Typography and Design Systems  Credits: 4 (0-8-0)
Course Description: Two- and three-dimensional solutions for advertising, corporate identity, packaging, and publication design.
Prerequisite: ART 355.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 456  Advanced Illustration  Credits: 4 (0-8-0)
Course Description: Projects in editorial and reportorial illustration emphasizing techniques applied to solving problems in advanced composition.
Prerequisite: ART 356.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 457  Advanced Interactive Media  Credits: 4 (0-8-0)
Course Description: Technical, conceptual, and historic aspects of creating interactive electronic media.
Prerequisite: (ART 255 or ART 256) and (ART 357).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 458  Advanced Experimental Video  Credits: 4 (0-8-0)
Course Description: Advanced experimental video and visual effects.
Prerequisite: (ART 255 or ART 256) and (ART 358).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 460  Advanced Painting I  Credits: 4 (0-8-0)
Course Description: Advanced composition and exploration of individual creative expression.
Prerequisite: ART 360 and ART 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 461  Advanced Painting II  Credits: 4 (0-8-0)
Course Description: Continuation in direction of individual creative expression.
Prerequisite: ART 460.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 465  Printmaking IV-Studio Workshop  Credits: 4 (0-8-0)
Course Description: Advanced printmaking workshop; intaglio, relief, planographic, and stencil; continued emphasis on individual creative growth.
Prerequisite: ART 366.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 466  Printmaking V-Studio Workshop  Credits: 4 (0-8-0)
Course Description: Advanced printmaking concepts in studio and research problems.
Prerequisite: ART 465.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 470  Sculpture IV  Credits: 4 (0-8-0)
Course Description: Development of individual expression using sculptural techniques.
Prerequisite: ART 370 and ART 371.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 471  Sculpture V  Credits: 4 (0-8-0)
Course Description: Advanced expression using sculptural techniques.
Prerequisite: ART 470.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 482A  Study Abroad: Art History in Italy  Credit: 1 (0-0-1)
Course Description: Special topics in Italian art history; most classes will be taught on-site at museums, churches, and galleries in Italy. Focus on the art and architecture of the famed Michelangelo Buonarroti.
Prerequisite: ART 212.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 487  Internship  Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in an approved location.
Prerequisite: None.
Registration Information: Junior or senior standing; written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 492A  Seminar: Art History  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: ART 212.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ART 492B Seminar: Art Education Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in ART 326.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495A Independent Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495B Independent Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495C Independent Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495D Independent Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495E Independent Study: Metalsmithing and Jewelry Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495F Independent Study: Drawing Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495G Independent Study: Graphic Design Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495H Independent Study: Art History Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495I Independent Study: Art Education Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 495J Independent Study: Pottery Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 495K Independent Study: Photo Image Making Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: ART 330.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496A Group Study: Painting Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496B Group Study: Printmaking Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496C Group Study: Sculpture Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496D Group Study: Fibers Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
ART 496E Group Study: Metalsmithing and Jewelry  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496F Group Study: Drawing  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496G Group Study: Graphic Design  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496H Group Study: Art History  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: ART 212.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496I Group Study: Art Education  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 496J Group Study: Pottery  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 496K Group Study: Photo Image Making  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 510A Advanced Study in Art History: American Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510B Advanced Study in Art History: African Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510C Advanced Study in Art History: Pre-Colombian Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 510D Advanced Study in Art History: United States Art Since 1945  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510E Advanced Study in Art History: Greek Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510F Advanced Study in Art History: Medieval Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510G Advanced Study in Art History: Renaissance Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510H Advanced Study in Art History: Baroque and Rococo Art  Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ART 510J Advanced Study in Art History: 19th-Century European Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510K Advanced Study in Art History: 20th Century European Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510M Advanced Study in Art History: Roman Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510N Advanced Study in Art History: Graphic Design Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510O Advanced Study in Art History: Women in Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510P Advanced Study in Art History: Pacific Art Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 510Q Advanced Study in Art History: Contemporary Art and Art Critics Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ART 514 Contemporary American Art Critics and Artists Credits: 3 (0-0-3)
Course Description: Issues in contemporary American art are explored through the work of critics and artists who visit through the Critic and Artist Residency Series.
Prerequisite: ART 510E.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ART 515 Seminar-Contemporary Art Theory Credits: 3 (0-0-3)
Course Description: Relationship between critical theory and the visual arts; how artists and critics apply theory in their work.
Prerequisite: ART 510E.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575A Studio Problems: Painting Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575B Studio Problems: Printmaking Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575C Studio Problems: Sculpture Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575D Studio Problems: Fibers Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 575E Studio Problems: Metalsmithing and Jewelry Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: .
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
ART 575F  Studio Problems: Drawing  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: 
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 575G  Studio Problems: Graphic Design  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: 
Registration Information: Acceptance into MFA program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 592  Art History Seminar  Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Registration Information: Required for course admittance: Twenty-one credits of art history.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 675A  Studio Problems: Painting  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575A - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675B  Studio Problems: Printmaking  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575B - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675C  Studio Problems: Sculpture  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575C - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675D  Studio Problems: Fibers  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575D - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675E  Studio Problems: Metalsmithing and Jewelry  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575E - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ART 675F  Studio Problems: Drawing  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575F - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 675G  Studio Problems: Graphic Design  Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: ART 575G - at least 10 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ART 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695A  Independent Study: Painting  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695B  Independent Study: Printmaking  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695C  Independent Study: Sculpture  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695D  Independent Study: Fibers  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
ART 695E  Independent Study: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 695F  Independent Study: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695G  Independent Study: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 695H  Independent Study: Art History Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696A  Group Study: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696B  Group Study: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696C  Group Study: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696D  Group Study: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696E  Group Study: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696F  Group Study: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696G  Group Study: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696H  Group Study: Art History Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 696I  Group Study: Multiple Media Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699A  Thesis: Painting Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575A and/or ART 675A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699B  Thesis: Printmaking Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575B and/or ART 675B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.
ART 699C Thesis: Sculpture Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575C and/or ART 675C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699D Thesis: Fibers Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575D and/or ART 675D.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699E Thesis: Metalsmithing and Jewelry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575E and/or ART 675E.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

ART 699F Thesis: Drawing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575F and/or ART 675F.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ART 699G Thesis: Graphic Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Must have taken twelve credits in ART 575G and/or ART 675G.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Astronomy-AA (AA)

Courses
AA 100 Introduction to Astronomy (GT-SC2) Credits: 3 (3-0-0)
Course Description: Description of the various objects found in the heavens as well as the principles and techniques employed in investigations of these objects.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

AA 101 Astronomy Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Observations of the various objects found in the heavens with 5-inch reflecting telescope.
Prerequisite: AA 100, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

AA 150 Observational Astronomy Credits: 3 (2-3-0)
Course Description: Astronomical objects in the night and day sky; observation with 16-inch telescope.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AA 301 Astrophysics I Credits: 5 (4-2-0)
Course Description: Celestial mechanics, earth-moon systems, planets and satellites, interplanetary medium, origin of solar system.
Prerequisite: (MATH 124) and (MATH 126) and (PH 110 or PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AA 302 Astrophysics II Credits: 5 (4-2-0)
Course Description: Properties of sun and stars, variable stars, binary and multiple star systems, star clusters, interstellar medium, stellar evolution.
Prerequisite: (MATH 124) and (MATH 126) and (PH 110 or PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AA 303 Astrophysics III Credits: 5 (4-2-0)
Course Description: Properties of the Milky Way, galaxies, quasars and related objects; special and general relativity; cosmology.
Prerequisite: (MATH 124) and (MATH 126) and (PH 110 or PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AA 495 Independent Study in Astrophysics Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Atmospheric Science-ATS (ATS)
Courses

ATS 150 Science of Global Climate Change Credits: 3 (3-0-0)
Course Description: Physical basis of climate change. Energy budget of the earth, the greenhouse effect, carbon cycle, paleoclimate, projections of 21st-century climate.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 350 Introduction to Weather and Climate Credits: 2 (2-0-0)
Course Description: Behavior of atmosphere and its influence upon human's activities.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 351 Introduction to Weather and Climate Laboratory Credit: 1 (0-3-0)
Course Description: Actual weather data, visualization of meteorological phenomena, in-depth discussion of current environmental issues.
Prerequisite: ATS 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 543 Current Topics in Climate Change Credits: 2 (2-0-0)
Also Offered As: ESS 543.
Course Description: Climate fundamentals and current topics in climate change.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.
Registration Information: Credit not allowed for both ATS 543 and ESS 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 545 Atmospheric Circulations Credits: 3 (3-0-0)
Course Description: Observations and theory of the general circulation of the atmosphere, with emphasis on understanding physical mechanisms.
Prerequisite: ATS 602, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 560 Air Pollution Measurement Credits: 2 (1-3-0)
Course Description: Examination and application of techniques for air pollution measurement. Includes sampling and analysis of gases, aerosols, and precipitation.
Prerequisite: CHEM 114.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 561 Atmospheric Dynamics I Credits: 2 (2-0-0)
Course Description: Equations of motion; earth’s rotation; balanced motion; vorticity and Rossby waves; shallow water models; potential vorticity.
Prerequisite: MATH 261 and MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 562 Atmospheric Dynamics II Credits: 2 (2-0-0)
Course Description: Sound waves, gravity waves, Rossby waves; numerical weather prediction; baroclinic instability; general circulation; tropical dynamics.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 564 Atmospheric Modeling Credits: 3 (3-0-0)
Course Description: Design of numerical models of the atmosphere; applications to current problems. Emphasis on practical understanding of relevant numerical methods.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 565 Atmospheric Circulations Credits: 3 (3-0-0)
Course Description: Global energy balance, surface energy balance, the hydrological cycle, atmosphere general circulation, ocean general circulation, climate variability, climate sensitivity and feedbacks.
Prerequisite: MATH 261 and MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 567 Computational Methods for Atmospheric Science Credits: 3 (3-0-0)
Course Description: Computer programming tools unique to and common in the atmospheric sciences.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ATS 610 Physical Oceanography  Credits: 3 (3-0-0)
Course Description: Foundations of ocean circulation theory and the
general circulation of the oceans using observational data and rotating
tank experiments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 620 Thermodynamics and Cloud Physics  Credits: 2 (2-0-0)
Course Description: Equilibrium thermodynamics, cloud microphysics,
precipitation formation, and cloud electrification.
Prerequisite: MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 621 Atmospheric Chemistry  Credits: 2 (2-0-0)
Course Description: Overview of chemical kinetics and equilibria; sources
and sinks of pollutants; photochemistry and smog formation; aqueous-
phase chemistry; acid rain.
Prerequisite: CHEM 114 and MATH 340 and PH 142.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 622 Atmospheric Radiation  Credits: 2 (2-0-0)
Course Description: Role of radiation in the energy balance of the climate
system; Absorption and scattering of solar radiation; Emission and
absorption of terrestrial radiation; Interactions of radiation with clouds
and aerosols; Role of radiative active trace gases.
Prerequisite: ATS 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 623 Atmospheric Boundary Layer  Credits: 2 (2-0-0)
Course Description: Equations for shallow atmospheric motions; thermal
instability of a fluid layer; atmospheric turbulence; flow stability; 1-D
mixed layer models.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 631 Introduction to Atmospheric Aerosols  Credits: 2 (1-3-0)
Course Description: Physical, chemical and microphysical characteristics
of atmospheric particulate matter; measurement principles and
techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 640 Synoptic Meteorology  Credits: 2 (1-2-0)
Course Description: Synoptic-scale weather systems; thermodynamic
diagrams; vertical motion; fronts; cyclones and anticyclones.
Prerequisite: ATS 601, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 641 Mesoscale Meteorology  Credits: 2 (1-2-0)
Course Description: Mesoscale weather systems; instabilities; orographic
flows; dynamics of convective storms; organized convection.
Prerequisite: ATS 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 642 Mesoscale Meteorology  Credits: 2 (1-2-0)
Course Description: Mesoscale weather systems; instabilities; orographic
flows; dynamics of convective storms; organized convection.
Prerequisite: ATS 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 650 Objective Analysis in Atmospheric Sciences  Credits: 3 (3-0-0)
Course Description: Objective analysis of geophysical data: general
statistics; matrix methods; time series analysis. Emphasis on
applications to real-world data.
Prerequisite: ATS 601 or MATH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 652 Atmospheric Remote Sensing  Credits: 2 (2-0-0)
Course Description: Concepts of electromagnetic and acoustic wave
propagation; active and passive remote sensing techniques including
radar, lidar, thermal emission systems.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 653 Responsible Research in Atmospheric Science  Credit: 1 (0-0-1)
Course Description: Scientific misconduct; ethical publishing; record
keeping; data management; professional skills applicable to atmospheric
science.
Prerequisite: None.
Registration Information: Must be admitted to Atmospheric Science
degree program.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ATS 695A Independent Study: Atmosphere/Ocean Coupling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 695B Independent Study: Atmospheric Science Topics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 695C Thesis: Atmospheric Dynamics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 695E Thesis: Remote Sensing Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 695F Thesis: Ocean-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699A Thesis: General Circulation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699B Thesis: Remote Sensing of Climate Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699C Thesis: Atmosphere/Ocean Coupling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699D Thesis: Atmospheric Science Topics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699E Thesis: Land-Atmosphere Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699F Thesis: Chemistry-Climate Interactions Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699G Thesis: Dynamic Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699H Thesis: Aerosol and Cloud Microphysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699I Thesis: Satellite Applications Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699J Thesis: Mesoscale Meteorology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699K Thesis: Dynamics and Physics of Clouds Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ATS 699O Thesis: Mesoscale Modeling Credits: Var [1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699P Thesis: Radiation Theory Credits: Var [1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699Q Thesis: Radar Meteorology Credits: Var [1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699R Thesis: Aerosol and Cloud Chemistry Credits: Var [1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699S Thesis: Climate Dynamics Credits: Var [1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 699U Thesis: Tropospheric Chemistry Credits: Var [1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 699V Thesis: Atmospheric Variability Credits: Var [1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 703 Numerical Weather Prediction Credits: 2 (2-0-0)
Course Description: Quasi-geostrophic approximation; barotropic, baroclinic, primitive equation, and general circulation models; numerical methods.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 704 Large-Scale Atmospheric Dynamics Credits: 2 (2-0-0)
Course Description: Quasi-static, quasi-geostrophic equations; planetary waves; geostrophic adjustment; barotropic, baroclinic instability; frontogenesis; tropical cyclones.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 707 Atmospheric Waves and Vortices Credits: 3 (2-0-1)
Course Description: Atmospheric wave motions and embedded vortices spanning mountain waves to large-scale Rossby waves and critical layers.
Prerequisite: ATS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 708 Middle Atmospheric Dynamics Credits: 3 (3-0-0)
Course Description: Dynamics of the stratosphere and mesosphere with emphasis on the lower and middle stratosphere.
Prerequisite: ATS 602.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 710 Geophysical Vortices Credits: 3 (3-0-0)
Course Description: Observational, experimental, and theoretical aspects of geophysical vortices, such as hurricanes, polar lows, tornadoes, and dust devils.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 711 Microclimate Credits: 2 (2-0-0)
Course Description: Momentum, heat, water, and trace gas fluxes near the earth’s surface, including fluxes between the atmosphere and the land/ocean/ice surfaces.
Prerequisite: MATH 340 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ATS 712 Dynamics of Clouds Credits: 3 (3-0-0)
Course Description: General theory of cloud dynamics; parameterization of microphysics and radiation; models of fog, stratocumuli, cumulonimbus, and orographic clouds.
Prerequisite: ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 715 Atmospheric Oxidation Processes Credits: 2 (2-0-0)
Course Description: Atmospheric hydrocarbon and nitrogen oxide reactions; aqueous phase scavenging and reactions; chemical pathways in the atmosphere.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 716 Air Quality Characterization Credits: 2 (1-2-0)
Course Description: Planning, executing, and reporting on a measurement campaign to characterize local air quality.
Prerequisite: (ATS 560) and (ATS 555 or ATS 621).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 721 Theoretical Topics in Radiative Transfer Credits: 3 (3-0-0)
Course Description: Physics of atmospheric radiation; theoretical techniques used to show radiation transfer equation.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 722 Atmospheric Radiation and Energetics Credits: 3 (2-0-1)
Course Description: Radiative transfer in the atmosphere; implications on remote sensing and energetics.
Prerequisite: ATS 622.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 724 Cloud Microphysics Credits: 2 (2-0-0)
Course Description: Theories and observations of nucleation; cloud droplet spectra broadening; precipitation growth and breakup; ice multiplication; cloud electrification.
Prerequisite: ATS 621.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 725 Mesoscale Dynamics Credits: 3 (3-0-0)
Course Description: Analysis of physical and dynamical processes that initiate, maintain, and modulate atmospheric mesoscale phenomena.
Prerequisite: ATS 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 730 Mesoscale Modeling Credits: 3 (3-0-0)
Course Description: Development of basic equations used in mesoscale models and methodology of solution
Prerequisite: ATS 602 and ATS 623.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 735 Satellite Observation of Atmosphere and Earth Credits: 3 (3-0-0)
Course Description: Satellite measurements; basic orbits and observing systems; applications of remote probing and imaging to investigations of atmospheric processes.
Prerequisite: ATS 622 and ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 741 Radar Meteorology Credits: 3 (3-0-0)
Course Description: Radar systems; radar equation and applications; multiple Doppler observation and processing; radar studies of mesoscale systems.
Prerequisite: ATS 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 742 Tropical Meteorology Credits: 2 (2-0-0)
Course Description: Overview of the tropical atmosphere, monsoons, intraseasonal variability, hurricanes, theory of tropical convection and the large-scale circulation.
Prerequisite: ATS 601 and ATS 602 and ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 743 Interactions of the Ocean and Atmosphere Credits: 3 (3-0-0)
Course Description: Ocean-atmosphere interactions in observations, theory, and models. Time mean atmosphere-ocean circulations through climate variability and change.
Prerequisite: ATS 602.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ATS 745 Atmospheric General Circulation Modeling Credits: 3 (3-0-0)
Course Description: Current problems in modeling of the general circulation of the atmosphere.
Prerequisite: ATS 602 and ATS 605.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 750 Climate Dynamics: Atmospheric Variability Credits: 3 (3-0-0)
Course Description: Analysis and interpretation of large-scale patterns of climate variability and observed climate change.
Prerequisite: ATS 605 and ATS 655.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 752 Inverse Methods in Atmospheric Science Credits: 2 (2-0-0)
Course Description: Introduction to inverse modeling, with particular application to remote sensing retrievals, flux inversions and data assimilation.
Prerequisite: None.
Registration Information: Ph.D. standing in Atmospheric Science required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ATS 753 Global Hydrologic Cycle Credits: 3 (3-0-0)
Course Description: Hydrologic cycle, moisture transport and air-ground exchange; water budgets of meteorological phenomena; climatology of atmospheric water.
Prerequisite: (ATS 601) and (ATS 622 or ATS 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 755 Theoretical and Applied Climatology Credits: 3 (3-0-0)
Course Description: Current topics in climate research.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 760 Global Carbon Cycle Credits: 2 (2-0-0)
Course Description: Exchanges of CO2 between the atmosphere, the land surface, and oceans. Biogeochemical processes. Micrometeorological and inverse flux estimation.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 761 Land-Atmosphere Interactions Credits: 2 (2-0-0)
Course Description: Exchange of energy, water, momentum, and carbon between the land surface and the atmosphere.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 762 Biosphere-Chemistry-Climate Interactions Credits: 2 (2-0-0)
Course Description: Explore the sensitivity of the climate system to atmospheric chemical composition with emphasis on connections to biospheric processes and feedbacks.
Prerequisite: ATS 621.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 765 Climate Dynamics-Ocean Variability Credits: 3 (3-0-0)
Course Description: Climate variability on time scales of years to millennia with focus on the role of the ocean circulation. Approach through dynamical systems theory.
Prerequisite: ATS 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 770 Ocean Modeling Credits: 3 (3-0-0)
Course Description: Conceptual and numerical ocean models and their application to current problems in climate science and biogeochemical cycles.
Prerequisite: ATS 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 772 Aerosol Chemistry Credits: 2 (2-0-0)
Course Description: Physics and chemistry of atmospheric aerosols including composition, surface properties, size, interaction with radiation sources, sinks.
Prerequisite: (CHEM 114 and MATH 161) and (PH 122 or PH 142).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ATS 774 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 784 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ATS 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799A Dissertation: Atmospheric Dynamics Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799B Dissertation: Land-Atmosphere Interactions Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799C Dissertation: Chemistry-Climate Interactions Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799D Dissertation: Weather Systems Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799E Dissertation: Remote Sensing Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799F Dissertation: Ocean-Atmosphere Interactions Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799G Dissertation: General Circulation Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799H Dissertation: Remote Sensing of Climate Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799I Dissertation: Atmospheric Chemistry Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799J Dissertation: Aerosol and Cloud Microphysics Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799K Dissertation: Dynamic Meteorology Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799L Dissertation: Satellite Applications Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799M Dissertation: Mesoscale Meteorology Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799N Dissertation: Dynamics and Physics of Clouds Credits:
Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ATS 799O  Dissertation: Mesoscale Modeling  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799P  Dissertation: Radiation Theory  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799Q  Dissertation: Radar Meteorology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799R  Dissertation: Aerosol and Cloud Chemistry  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799S  Dissertation: Climate Dynamics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799T  Dissertation: Chemistry in the Atmosphere-Earth Systems  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ATS 799U  Dissertation: Tropospheric Chemistry  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ATS 799V  Dissertation: Atmospheric Variability  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Bioag'l Sci + Pest Mgmt-BSPM (BSPM)

Courses

BSPM 102  Insects, Science, and Society (GT-SC2)  Credits: 3 (3-0-0)
Course Description: How insects develop, behave, and affect human activity. What every student should know about the most diverse life form on Earth.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 201  Weed Management and Control  Credits: 3 (0-0-3)
Course Description: Basic overview of weeds and weed control.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 300  Topics in Livestock Entomology  Credit: 1 (1-0-0)
Also Offered As: ANEQ 300B.
Course Description: Identification, biology, and management of insect, tick, and mite pests.
Prerequisite: BZ 100 to 199 between 3 and 5 credits - at least 3 credits or LIFE 100 to 199 between 3 and 5 credits - at least 3 credits.
Registration Information: Credit not allowed for both BSPM 300 and ANEQ 300B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 302  Applied and General Entomology  Credits: 2 (2-0-0)
Course Description: Biology and management of insects.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 303A  Entomology Laboratory: General  Credits: 2 (0-4-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
BSPM 303B Entomology Laboratory: Horticultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 303C Entomology Laboratory: Agricultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 308 Ecology and Management of Weeds Credits: 3 (2-3-0)
Course Description: Classification, characteristics; weed biology and ecology; control by cultural, mechanical, chemical, and biological means; successional management.
Prerequisite: (BZ 120 or LIFE 103) and (CHEM 107 or CHEM 111).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 310 Understanding Pesticides Credits: 3 (3-0-0)
Course Description: Identification, properties, use, labeling, environmental interactions, and application of major classes of pesticides.
Prerequisite: BZ 100 to 199 - at least 3 credits or CHEM 100 to 199 - at least 3 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 350 Science Illustration Credits: 2 (1-2-0)
Course Description: Fundamentals of science illustration, emphasizing observational and drawing skills.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 355A Horticulture Pathology: General Pathology Credit: 1 (1-0-0)
Course Description: A 5-week course consisting of General Plant Pathology; identification of the organisms that can cause plant diseases.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355A and BSPM 381A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355C Horticulture Pathology: Vegetable and Greenhouse Disease Credit: 1 (1-0-0)
Course Description: Diseases in the Greenhouse and Vegetable crops, management and control.
Prerequisite: BSPM 355A.
Registration Information: Offered as an online course only. This is a partial semester course. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. Credit not allowed for both BSPM 356A and BSPM 102, or BSPM 302 or BSPM 303B. This is a partial-semester course. Offered online only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B Horticultural Entomology: Food Crops Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: This is a partial-semester course. Offered online only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticultural Entomology: Landscape Plants Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 361 Elements of Plant Pathology Credits: 3 (2-2-0)
Course Description: Diseases of economic plants.
Prerequisite: BZ 104 or BZ 120 or HORT 100 or LIFE 102.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 365 Integrated Tree Health Management Credits: 4 (3-3-0)
Course Description: Insects and diseases in forest and urban ecosystems. Effects, diagnosis, prevention, and interactions.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
BSPM 384  Supervised College Teaching  Credits: Var[1-3] (0-0-0)

Course Description:
None.

Registration Information: None.

Term Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: Yes.

BSPM 415  Pollinator Management in Agroecosystems  Credit: 1 (1-0-0)

Also Offered As: SOCR 415.

Course Description: Fundamentals of pollinator management, sustainable crop-pollinator interactions, global issues on pollinator conservation.

Prerequisite: HORT 100 or SOCR 100.

Registration Information: Credit not allowed for both BSPM 415 and SOCR 415. This is a partial-semester course. Required field trips.

Term Offered: Spring (odd years).

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 423  Evolution and Classification of Insects  Credits: 3 (1-4-0)

Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.

Prerequisite: None.

Registration Information: Must register for lecture and laboratory. Credit not allowed for both BSPM 423 and BSPM 523.

Term Offered: Fall (odd years).

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 424  Principles of Systematic Zoology  Credits: 3 (3-0-0)

Also Offered As: BZ 424.

Course Description: Principles and methods of classification, zoological nomenclature, taxonomic decisions regarding species and higher categories.

Prerequisite: BZ 111 and BZ 110 or LIFE 103.

Registration Information: Credit not allowed for both BSPM 424 and BZ 424.

Term Offered: Spring (even years).

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 445  Aquatic Insects  Credits: 4 (2-4-0)

Course Description: Biology and recognition of major orders and families of aquatic insects; a collection is required.

Prerequisite: BZ 111 or LIFE 103.

Registration Information: Must register for lecture and laboratory.

Term Offered: Fall.

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 450  Molecular Plant-Microbe Interaction  Credits: 3 (3-0-0)

Course Description: Principles of plant-microbe/insect interactions, physiological and molecular aspects of plant defense, genomics approaches to study plant defense.

Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).

Registration Information: Credit not allowed for both BSPM 450 and BSPM 550.

Term Offered: Spring (even years).

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 451  Integrated Pest Management  Credits: 3 (3-0-0)

Course Description: Concepts of integrated pest management and the strategies and tactics employed in the application of these concepts.

Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.

Term Offered: Spring (odd years).

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 462  Parasitology and Vector Biology  Credits: 5 (3-4-0)

Also Offered As: BZ 462 and MIP 462.

Course Description: Protozoa, helminths, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.

Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).

Registration Information: Must register for lecture and laboratory. Credit not allowed for only one of the following: BSPM 462, BZ 462, MIP 462.

Term Offered: Fall.

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 492  Seminar  Credits: Var[1-3] (0-0-0)

Course Description:
None.

Term Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

BSPM 495  Independent Study  Credits: Var[1-3] (0-0-0)

Course Description:
None.

Term Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

BSPM 496  Group Study  Credits: Var[1-3] (0-0-0)

Course Description:
None.

Term Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

BSPM 497  Internship  Credits: Var[1-18] (0-0-0)

Course Description:
None.

Term Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

BSPM 498  Research  Credits: Var[1-18] (0-0-0)

Course Description:
None.

Term Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

BSPM 500  Foundations of Bioagricultural Sciences  Credits: 2 (2-0-0)

Course Description: Introduction to graduate school covering managing time, advisor and research, plus a survey of topics encompassed by the department of BSPM.

Prerequisite: None.

Restriction: Must be a Graduate.

Term Offered: Fall.

Grade Mode: Traditional.

Special Course Fee: No.

BSPM 502A  Topics in Plant Pathology: Plant Viruses  Credit: 1 (1-0-0)

Course Description:
None.

Term Offered: Fall (odd years).

Grade Mode: Traditional.

Special Course Fee: No.
BSPM 502B Topics in Plant Pathology: Plant Bacteriology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BZ 300 to 499 - at least 3 credits or LIFE 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502F Topics in Plant Pathology: Plant Disease Epidemiology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BSPM 361.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 507 Insect Behavior Credits: 3 (3-0-0)
Course Description: Behavior of insects and related arthropods with special attention to social behavior.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 508 Environmental Fate of Pesticides Credits: 3 (3-0-0)
Course Description: Processes that affect fate of pesticides and their metabolites in the environment with emphasis on soil and water.
Prerequisite: BZ 440 or CHEM 245 or SOCR 240.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 509 Herbicide Selectivity and Action Credits: 3 (3-0-0)
Course Description: Selectivity of major photosynthetic and growth inhibitor herbicides based on herbicide transport, metabolism, and mode of action.
Prerequisite: BSPM 308 or BZ 440.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 510 Insect-Plant Disease Relationships Credits: 3 (3-0-0)
Course Description: Relationships between insects and various plant pathogens as they affect survival and transmissions of pathogens.
Prerequisite: BSPM 302 or BSPM 361.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BZ 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BSPM 424 or BZ 424 or BZ 325.
Registration Information: Credit not allowed for both BSPM 520 and BZ 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 521 Forest Health Issues Credits: 3 (3-0-0)
Course Description: Current topics related to forest and shade tree health from ecosystems to tree defense physiology.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 523 Advanced Evolution/Classification of Insects Credits: 4 (1-4-1)
Course Description: Major groups of insects, living and fossil; major evolutionary trends in structure and behavior.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both BSPM 523 and BSPM 423.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 525 Insect Physiology Credits: 3 (3-0-0)
Also Offered As: BZ 525.
Course Description: Principles of insect function.
Prerequisite: BSPM 302.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BZ 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BSPM 526 and BZ 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 528 Invasive Plants/Weeds: Ecosystems to Molecules Credits: 3 (3-0-0)
Course Description: Contributions of disciplines of weed science and invasion ecology to understanding the biology, ecology and management of "problem plants."
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (BZ 120) and (LIFE 102 or LIFE 103).
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 530 Scientific Writing Credit: 1 (1-0-0)
Also Offered As: SOCR 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 530 and SOCR 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
BSPM 540 Understanding Genomes  Credits: 3 (3-0-0)
Course Description: Harnessing genome information and related -omics level technologies for use in answering biological questions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 550 Molecular Plant-Microbe Interactions  Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe interactions, physiological and molecular aspects of plant defense, genomic approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOC 330).
Registration Information: Credit not allowed for both BSPM 550 and BSPM 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 551 Advanced Integrated Pest Management  Credits: 4 (3-0-1)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the practical application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 555 Immature Insects  Credits: 3 (1-4-0)
Course Description: Characteristics of immature forms of orders and families of insects emphasizing those important to man.
Prerequisite: BSPM 303A or BSPM 303B or BSPM 303C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 556 Biological Control of Plant Pests  Credits: 3 (3-0-0)
Course Description: Management of insect pests of plants and weeds using biological control agents such as insects, bacteria, viruses, and fungi.
Prerequisite: (BZ 120 or LIFE 103) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 570 Chemical Ecology  Credits: 3 (3-0-0)
Course Description: Chemical interactions among animals, plants, fungi, and microorganisms.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 571 Techniques in Chemical Ecology  Credit: 1 (0-2-0)
Course Description: Practical experience with chemical techniques for separation, analysis, and synthesis of natural products together with biological assays for activity.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 575 Molecular and Genomic Evolution  Credits: 3 (3-0-0)
Also Offered As: BZ 575.
Course Description: Molecular, biological mechanisms of evolutionary change: mutation; selection; gene expression/regulation; changes in whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BSPM 575 and BZ 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 576 Bioinformatics  Credits: 3 (3-0-0)
Also Offered As: MIP 576.
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both BSPM 576 and MIP 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 584 Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 587 Internship  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 592 Seminar  Credits: Var[1-3] (0-0-0)
Course Description: Major questions and theory pertinent to understanding current and relevant science topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 594 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 596 Group Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BSPM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 710 Techniques in Molecular Biology and Genetics Credits: 3 (0-4-1)
Also Offered As: CM 710.
Course Description: Genetic manipulation of bacteria, bacteriophage, and yeast including experiments in molecular cloning and gene expression.
Prerequisite: BC 463 or BZ 346 or BZ 350 or MIP 450 or SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation. Credit not allowed for both BSPM 710 and CM 710.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: SOCR 740.
Course Description: Advances in study of organization and function of nuclear and organellar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BSPM 740 and SOCR 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 787 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 792 Seminar Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 794 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Biochem + Mole Biology-BC (BC)

Courses

BC 192 Biochemistry Freshman Seminar Credits: 2 (1-0-1)
Course Description: Introduction to curriculum and career options for biochemistry majors.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 295 Introductory Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Apply principles and knowledge being learned in first and second year life sciences and chemistry courses.
Prerequisite: LIFE 102 or CHEM 112, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 351 Principles of Biochemistry Credits: 4 (4-0-0)
Course Description: Structure and function of biological molecules; biocatalysis; metabolism and energy transduction; gene expression.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245 or CHEM 341 or CHEM 345).
Registration Information: For majors in biological sciences, engineering, and preprofessional students in the health sciences. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
BC 353 Pre-Health Genetics Credits: 4 (4-0-0)
Course Description: Applies and extends the biochemical concepts learned in BC 351 to macromolecules and molecular processes based on nucleic acids.
Prerequisite: BC 351.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 401 Comprehensive Biochemistry I Credits: 3 (3-0-0)
Course Description: Macromolecular structure and dynamics; membranes; enzymes; bioenergetics.
Prerequisite: (CHEM 245 or CHEM 343, may be taken concurrently or CHEM 346, may be taken concurrently) and (MATH 155 or MATH 160).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 403 Comprehensive Biochemistry II Credits: 3 (3-0-0)
Course Description: Metabolic pathways and their regulation; cellular biochemistry.
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 404 Comprehensive Biochemistry Laboratory Credits: 2 (0-6-0)
Course Description: Experimental approaches to studying macromolecules, metabolism, and gene expressions.
Prerequisite: (BC 401, may be taken concurrently) and (CHEM 246 or CHEM 344 or CHEM 346) and (LIFE 212 and LIFE 203).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BC 405 Comprehensive Biochemistry II--Honors Recitation Credit: 1 (0-0-1)
Course Description: Read and discuss current literature related to material presented in BC 403.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 403.
For students participating in the Honors program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 411 Physical Biochemistry Credits: 4 (3-0-1)
Course Description: Thermodynamics; reaction rates; quantum chemistry; spectroscopy; macromolecular folding and interactions; ligand binding; enzyme kinetics; membranes.
Prerequisite: (BC 351 with a minimum grade of B or BC 401) and (CHEM 113) and (MATH 161 or MATH 255).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 441 3D Molecular Models for Biochemistry Credit: 1 (0-1.5-.5)
Course Description: Computer instruction to construct 3D models of proteins and nucleic acids using leading software.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for laboratory and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 463 Molecular Genetics Credits: 3 (3-0-0)
Course Description: Molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (BC 401 with a minimum grade of C, may be taken concurrently) or BC 351 with a minimum grade of C) and (LIFE 201B with a minimum grade of C or BC 350 with a minimum grade of C).
Registration Information: Credit not allowed for both BC 463 and BC 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 464 Molecular Genetics Recitation Credit: 1 (0-0-1)
Course Description: Methods used to study the molecular basis of gene structure, replication, repair, recombination, and expression.
Prerequisite: (LIFE 201B) and (BC 401, may be taken concurrently or BC 401, may be taken concurrently).
Registration Information: Must have concurrent registration in BC 463.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 465 Molecular Regulation of Cell Function Credits: 3 (3-0-0)
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.
Prerequisite: (LIFE 210) and (BC 403, may be taken concurrently or BC 351).
Registration Information: Credit not allowed for both BC 465 and BC 565.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 466 Molecular Regulation of Cell Function-Honors Credit: 1 (0-0-1)
Course Description: Discussions of current articles in cell biology including methods and molecular mechanisms that explain cell behavior in health and disease.
Prerequisite: None.
Registration Information: Must have concurrent registration in BC 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 467 Biochemistry of Disease Credits: 3 (3-0-0)
Course Description: Biochemical basis of specific human diseases.
Prerequisite: BC 401.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BC 475 Mentored Research Credits: 3 (0-6-1)
Course Description: Plan and conduct mentored research with weekly discussion of progress, presentation at all-university symposium, and submission of written report.
Prerequisite: BC 404.
Registration Information: Must register for laboratory and recitation.
Maximum of 9 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
BC 484  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: Assist in teaching selected courses in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 487A Internship Credits: Var[1-18] (0-0-0)
Course Description: Work experience with an approved preceptor outside of a university laboratory environment.
Prerequisite: BC 401 and BC 403 and BC 404.
Registration Information: Written consent of instructor. Minimum GPA of 2.0.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 487B Internship: International Credits: Var[1-18] (0-0-0)
Course Description: Research in foreign host laboratory in contact with CSU mentor.
Prerequisite: BC 401 and BC 463 and BC 495 - at least 1 credit.
Registration Information: Selection by departmental committee. BC 495 (one credit in lab of CSU mentor).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 493  Senior Seminar  Credit: 1 (0-0-1)
Course Description: Critical analysis of selected literature in biochemistry and molecular biology.
Prerequisite: None.
Registration Information: BC 401 or concurrent registration.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: Research in foreign host laboratory in contact with CSU mentor.
Prerequisite: None.
Registration Information: Minimum cumulative GPA of 3.0.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: Faculty-directed exploration of areas of special interest in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 498  Research  Credits: Var[1-6] (0-0-0)
Course Description: Research in biochemistry and molecular biology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BC 499A  Thesis: Laboratory Research-Based  Credits: 3 (0-0-3)
Course Description: Laboratory-based research thesis.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499B  Thesis: Literature Based  Credits: 3 (0-0-3)
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499C  Thesis: Literature-based in Health and Med Sci  Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Health and Med. Sci.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499D  Thesis: Literature-based in Pre-Pharmacy  Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Pre-Pharmacy.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 499E  Thesis: Literature-based in Neurobiochemistry  Credits: 3 (0-0-3)
Course Description: Thesis - Literature-based in Neurobiochemistry.
Prerequisite: BC 493, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BC 511  Structural Biology I  Credits: 4 (3-0-1)
Course Description: Structural principles of biological macromolecules and techniques of structural analysis.
Prerequisite: BC 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 512  Principles of Macromolecular Structure  Credit: 1 (1-0-0)
Course Description: Physical interactions controlling folding and solution behavior of biological macromolecules, including proteins, nucleic acids, and membranes.
Prerequisite: BC 411, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BC 513  Enzymology  Credit: 1 (1-0-0)
Course Description: Kinetic methods, mechanism, and regulation of enzyme catalysis.
Prerequisite: BC 403.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BC 517  Metabolism  Credits: 2 (2-0-0)  
Course Description: Design and regulation of metabolic pathways.  
Prerequisite: BC 351 and BC 403.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 521  Principles of Chemical Biology  Credits: 3 (3-0-0)  
Also Offered As: CHEM 521.  
Course Description: Introduction to statistics, error analysis, and curve fitting of biochemical data with a focus on practical examples.  
Prerequisite: BC 511, may be taken concurrently.  
Registration Information: Credit not allowed for both BC 521 and CHEM 521.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 563  Molecular Genetics  Credits: 4 (3-0-1)  
Course Description: Mechanisms of replication, transcription, processing, translation, and packaging of genetic material, emphasizing original literature and methods.  
Prerequisite: BC 401 and LIFE 201B.  
Registration Information: Must register for lecture and recitation. Credit not allowed for both BC 563 and BC 463.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 565  Molecular Regulation of Cell Function  Credits: 4 (3-0-1)  
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.  
Prerequisite: (LIFE 210) and (BC 351 or BC 403, may be taken concurrently).  
Registration Information: Credit not allowed for both BC 565 and BC 465. Must register for lecture and recitation.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 589  Current Trends in Molecular Biosciences  Credits: 2 (1-2-0)  
Course Description: Biochemical and molecular biological foundations of molecular genetics/genetic engineering; molecular analysis of genes.  
Prerequisite: None.  
Registration Information: B.S. or B.A. in biology or chemistry; secondary school teaching certification required. Offered as an online course only.  
Term Offered: Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

BC 517  Metabolism  Credits: 2 (2-0-0)  
Course Description: Design and regulation of metabolic pathways.  
Prerequisite: BC 351 and BC 403.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 521  Principles of Chemical Biology  Credits: 3 (3-0-0)  
Also Offered As: CHEM 521.  
Course Description: Introduction to statistics, error analysis, and curve fitting of biochemical data with a focus on practical examples.  
Prerequisite: BC 511, may be taken concurrently.  
Registration Information: Credit not allowed for both BC 521 and CHEM 521.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 565  Molecular Regulation of Cell Function  Credits: 4 (3-0-1)  
Course Description: Molecular regulation of cell organization, membrane formation, organelle biogenesis, cell communication, shape and motility, growth, aging, and death.  
Prerequisite: (LIFE 210) and (BC 351 or BC 403, may be taken concurrently).  
Registration Information: Credit not allowed for both BC 565 and BC 465. Must register for lecture and recitation.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 589  Current Trends in Molecular Biosciences  Credits: 2 (1-2-0)  
Course Description: Biochemical and molecular biological foundations of molecular genetics/genetic engineering; molecular analysis of genes.  
Prerequisite: None.  
Registration Information: B.S. or B.A. in biology or chemistry; secondary school teaching certification required. Offered as an online course only.  
Term Offered: Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

BC 611  Structural Biology II  Credits: 2 (2-0-0)  
Course Description: Structure and interactions of biological macromolecules related to function.  
Prerequisite: BC 511.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 663  Gene Expression  Credits: 2 (2-0-0)  
Course Description: Eukaryotic transcription mechanisms with emphasis on methods of study and regulatory mechanisms.  
Prerequisite: BC 563.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 665A  Advanced Topics in Cell Regulation: Microscopic Methods  Credits: 2 (2-0-0)  
Course Description: Analysis of cell behavior, function and regulation.  
Prerequisite: BC 565.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 665B  Advanced Topics in Cell Regulation: Modern Methods  Credits: 2 (2-0-0)  
Course Description: Modern methods in cell biology.  
Prerequisite: BC 565.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

BC 695  Independent Study  Credits: Var[(1-18)] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.
**BC 698 Research Credits: Var[1-18] (0-0-0)**
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

**BC 699 Thesis Credits: Var[1-18] (0-0-0)**
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

**BC 701 Grant Proposal Writing and Reviewing Credit: 1 (1-0-0)**
Course Description: Didactic and hands-on experience with locating funding sources, writing effective grant proposals, and the review process in the bio-molecular sciences.
Prerequisite: (BC 403) and (BC 511, may be taken concurrently) and (BC 563, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BC 711A Advanced Topics in Structural Biology: Protein Structure and Function Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 711B Advanced Topics in Structural Biology: Membrane Proteins Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 711C Advanced Topics in Structural Biology: Protein-DNA Interactions Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 711D Advanced Topics in Structural Biology: Biomolecular Spectroscopy Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 711E Advanced Topics in Structural Biology: Biomolecular NMR Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 711F Advanced Topics in Structural Biology: Macromolecular X-ray Crystallography Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 511 and BC 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 763A Advanced Molecular Genetics Topics: Chromatin and Transcription Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 763B Advanced Molecular Genetics Topics: Transcriptional Control - Co-Activators and Corepressors Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 763C Advanced Molecular Genetics Topics: Concepts and Techniques of Genetic Analysis Credit: 1 (1-0-0)**
Course Description:
Prerequisite: BC 663, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**BC 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)**
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BC 793 Seminar Credit: 1 (0-0-1)**
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
BC 795 Independent Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

BC 796 Group Study  Credits: Var[1-5] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

BC 798 Research  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

BC 799 Dissertation  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

Biomedical Engineering-BIOM (BIOM)

Courses

BIOM 101 Introduction to Biomedical Engineering  Credits: 3 (3-0-0)  
Course Description: Basic principles, fundamentals in biomedical engineering including molecular, cellular and physiological principles, major areas such as biomechanics.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

BIOM 300 Problem-Based Learning Biomedical Engr Lab  Credits: 4 (1-4-1)  
Course Description: Group problem-based learning approach to problems spanning all core areas of biomedical engineering.  
Prerequisite: (BIOM 101) and (MATH 340 or MATH 345).  
Registration Information: Must register for lecture, lab, and recitation.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.

BIOM 306 Bioprocess Engineering  Credits: 4 (3-2-0)  
Also Offered As: BTEC 306.  
Course Description: Material, energy balances; fluid flow, heat exchange, mass transfer; application to operations in food, fermentation, other bioprocess industries.  
Prerequisite: (CHEM 107 or CHEM 111) and (PH 121 or PH 141).  
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 306 and BTEC 306.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

BIOM 421 Transport Phenomena in Biomedical Engineering  Credits: 3 (3-0-0)  
Course Description: Engineering models of active and passive mechanisms of momentum. Heat and mass transport in mammalian cells, tissues, and organ systems.  
Prerequisite: (BMS 300) and (CBE 332 or MECH 344).  
Registration Information: Credit not allowed for both BIOM 330 and BIOM 421.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.

BIOM 422 Kinetics of Biomolecular and Cellular Systems  Credits: 3 (3-0-0)  
Course Description: In-depth analysis of the systems approach to biology and biological engineering at the molecular and the cellular scales.  
Prerequisite: BIOM 330 or CBE 320.  
Registration Information: Credit not allowed for both BIOM 422 and BIOM 400.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

BIOM 431 Biomedical Signal and Image Processing  Credits: 3 (3-0-0)  
Also Offered As: ECE 431.  
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.  
Prerequisite: (ECE 303 with a minimum grade of C and ECE 311 with a minimum grade of C) and (PH 142 with a minimum grade of C).  
Registration Information: Credit not allowed for both BIOM 431 and ECE 431.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

BIOM 441 Biomechanics and Biomaterials  Credits: 3 (3-0-0)  
Course Description: Principles of biomechanics, biofluids, and biomaterials.  
Prerequisite: BMS 300, may be taken concurrently and CIVE 360 and MECH 324, may be taken concurrently and MECH 331, may be taken concurrently and MECH 342.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.
BIOM 470  Biomedical Engineering  Credits: 3 (3-0-0)
Also Offered As: MECH 470.
Course Description: Engineering application in human/animal physiology, diagnosis of disease, treatment, rehabilitation, human genome manipulation.
Prerequisite: (PH 141) and (MATH 155 or MATH 160).
Registration Information: Credit not allowed for both BIOM 470 and MECH 470.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 476A  Biomedical Clinical Practicum I  Credits: 2 (0-0-2)
Course Description: Biomedical lab work or exposure to the hospital/clinical environment.
Prerequisite: (BMS 300) and (BIOM 470 or MECH 470).
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 476B  Biomedical Clinical Practicum II  Credits: 4 (0-0-4)
Course Description: Biomedical lab work or exposure to the hospital/clinical environment.
Prerequisite: (BMS 300) and (BIOM 470 or MECH 470).
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 486A  Biomedical Design Practicum: Capstone Design I  Credits: 4 (0-0-10)
Course Description:
Prerequisite: (BIOM 300) and (BIOM 330 or BIOM 441 or ECE 441).
Registration Information: Enrollment in biomedical engineering major.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 486B  Biomedical Design Practicum: Capstone Design II  Credits: 4 (0-0-10)
Course Description:
Prerequisite: BIOM 486A.
Registration Information: Enrollment in biomedical engineering major.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 495  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 504  Fundamentals of Biochemical Engineering  Credits: 3 (3-0-0)
Also Offered As: CBE 504.
Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.
Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).
Registration Information: Credit not allowed for both BIOM 504 and CBE 504.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BIOM 522  Bioseparation Processes  Credits: 3 (2-2-0)
Also Offered As: CBE 522.
Course Description: Analysis of processes to recover and purify fermentation products.
Prerequisite: CBE 331.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BIOM 522 and CBE 522.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 525  Cell and Tissue Engineering  Credits: 3 (3-0-0)
Also Offered As: MECH 525.
Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.
Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.
Registration Information: Credit allowed for only one of the following: BIOM 525, CBE 525, MECH 525. Sections may be offered: Online.
Term Offered: Spring. (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 526  Biological Physics  Credits: 3 (3-0-0)
Also Offered As: ECE 526.
Course Description: Mathematical and physical modeling of biological systems. Mass transport in cellular environments. Electrical/mechanical properties of biomolecules.
Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).
Registration Information: Credit not allowed for both BIOM 526 and ECE 526. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 531  Materials Engineering  Credits: 3 (3-0-0)
Also Offered As: MECH 531.
Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.
Prerequisite: MECH 331 or MECH 431.
Registration Information: Credit not allowed for both BIOM 531 and MECH 531. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BIOM 532  Material Issues in Mechanical Design  Credits: 3 (3-0-0)
Also Offered As: MECH 532.
Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue and corrosion.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both BIOM 532 and MECH 532. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 533  Biomolecular Tools for Engineers  Credits: 3 (2-3-0)
Also Offered As: CIVE 533.
Course Description: Theoretical and practical aspects of biomolecular laboratory tools--PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.
Prerequisite: BMS 300 or MIP 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for BIOM 533, CIVE 533 and ECE 533.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BIOM 537  Biomedical Signal Processing  Credits: 3 (3-0-0)
Also Offered As: ECE 537.
Course Description: Measuring, manipulating, and interpreting biomedical signals.
Prerequisite: MATH 340 or ECE 311 or STAT 303.
Registration Information: Credit not allowed for both BIOM 537 and ECE 537.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 543  Membranes for Biotechnology and Biomedicine  Credits: 3 (3-0-0)
Also Offered As: CBE 543.
Course Description: Polymeric membrane formation, modification, module design and applications to bioseparation and biomedical separations and tissue engineering.
Prerequisite: CHEM 343 and CBE 310.
Registration Information: Credit not allowed for both BIOM 543 and CBE 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 570  Bioengineering  Credits: 3 (3-0-0)
Also Offered As: MECH 570.
Course Description: Physiological and medical systems analysis using engineering methods including mechanics, fluid dynamics, control electronics, and signal processing.
Prerequisite: MECH 307 and MECH 324.
Registration Information: Credit not allowed for both BIOM 570 and MECH 570. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 573  Structure and Function of Biomaterials  Credits: 3 (3-0-0)
Also Offered As: MECH 573.
Course Description: Structure-function relationships of natural biomaterials; application to analysis of biomimetic materials and biomaterials used in medical devices.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both BIOM 573 and MECH 573. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 574  Bio-Inspired Surfaces  Credits: 3 (3-0-0)
Also Offered As: MECH 574.
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 576  Quantitative Systems Physiology  Credits: 4 (4-0-0)
Also Offered As: MECH 576.
Course Description: Quantitative, model-oriented approach to cellular and systems physiology with design examples from biomedical engineering.
Prerequisite: BMS 300 and CHEM 113 and MATH 340 and PH 142.
Registration Information: Credit not allowed for both BIOM 576 and MECH 576. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 586A  Biomedical Clinical Practicum  Credits: 2 (1-3-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 586B  Biomedical Clinical Practicum  Credits: 4 (1-6-0)
Course Description: Graduate-level activity, such as biomedical research or design of a new medical device, for exposure to the hospital/clinical environment.
Prerequisite: (BMS 300 or BMS 500) and (BIOM 570 or MECH 570).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BIOM 592  Seminar  Credits: Var[1-3] (0-0-0)
Course Description: Student and research faculty presentations, guest and invited extramural speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BIOM 671  Orthopedic Tissue Biomechanics  Credits: 3 (3-0-0)
Course Description: Linear elastic, finite deformation, and viscoelastic theories applied to the mechanical behavior of orthopedic tissues (bone, tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a Graduate, Professional.
Registration Information: Credit not allowed for both BIOM 671 and MECH 671 or for BIOM 671/MECH 671 and BIOM 571/MECH 571.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course; may not be used to satisfy degree requirements requiring bioengineering courses.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 750  Grant Proposal Writing and Reviewing  Credit: 1 (1-0-0)
Course Description: Preparation and review of applications for fellowships and grants.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BIOM 784  Supervised College Teaching  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 786  Practicum-Laboratory Rotations  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 795  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 798  Research-Laboratory Rotations  Credits: Var[1-6] (0-0-0)
Course Description: Doctoral laboratory rotation.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BIOM 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Biomedical Science-BMS (BMS)

Courses

BMS 192  First Year Seminar in Biomedical Sciences  Credit: 1 (0-0-1)
Course Description: The university and its resources, college survival skills, careers in the biomedical sciences; current issues in health and biotechnology.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 200  Concepts in Human Anatomy and Physiology  Credit: 1 (0-0-1)
Course Description: Basic concepts in the anatomy and physiology of the human body.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 260  Biomedical Sciences  Credits: 3 (2-0-1)
Course Description: Opportunities and challenges in biomedical sciences; business of science, ethics, model systems, cellular and systemic physiology.
Prerequisite: LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 300  Principles of Human Physiology  Credits: 4 (4-0-0)
Course Description: Physiology of humans.
Prerequisite: (BZ 101 or BZ 110 or LIFE 102) and (CHEM 103 or CHEM 107 or CHEM 111).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
BMS 301 Human Gross Anatomy  Credits: 5 (3-2-1)
Course Description: Structure and function of the human body. Study of prosected human cadavers; clinical applications; living anatomy.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 302 Laboratory in Principles of Physiology  Credits: 2 (1-3-0)
Course Description: Basic physiology lab exercises.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 302 and BMS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 303 Domestic Animal Gross Anatomy  Credits: 4 (3-3-0)
Course Description: Comparative gross anatomy of domestic carnivores, ruminants, and horses.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 305 and VS 333.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 310 Anatomy for the Health Professions  Credits: 4 (3-3-0)
Course Description: Gross anatomy of the human body from a regional perspective, utilizing clinical applications as a basis for anatomical understanding.
Prerequisite: LIFE 000 to 499.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 320 Virtual Laboratory in Physiology  Credits: 2 (0-4-0)
Course Description: Physiology lab exercises using a virtual laboratory simulation system.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Credit not allowed for both BMS 320 and BMS 302. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 325 Cellular Neurobiology  Credits: 3 (3-0-0)
Course Description: Cellular and molecular bases of nervous system function and behavior.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 330 Microscopic Anatomy  Credits: 4 (3-3-0)
Course Description: Microscopic anatomy of mammalian tissue.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 330 and VS 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 345 Functional Neuroanatomy  Credits: 4 (3-2-0)
Course Description: Functional systems and circuits of the human brain and spinal cord.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 360 Fundamentals of Physiology  Credits: 4 (4-0-0)
Course Description: Cell, tissue, and organ function related to integrated whole body function.
Prerequisite: (BZ 110 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 384 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Supervision by and work with graduate teaching assistants in small group learning sessions involving students enrolled in BMS 300.
Prerequisite: BMS 300 or BMS 360.
Registration Information: A maximum of 10 combined credits for all 384 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 389 Human and Animal Reproductive Biology  Credits: 3 (3-0-0)
Course Description: Basis for male and female reproductive function in humans and animals.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BMS 420 Cardiopulmonary Physiology Credits: 3 (3-0-0)
Course Description: Normal and pathophysiology of cardiovascular and pulmonary systems.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 421 Perspectives in Cardiopulmonary Diseases Credits: 2 (1-0-1)
Course Description: Pathophysiology of cardiopulmonary diseases.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 420.
Biomedical sciences majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 425 Introduction to Systems Neurobiology Credits: 3 (3-0-0)
Course Description: Functional organization of the nervous system at the circuit level in producing simple and complex behaviors, sensations and cognition.
Prerequisite: BMS 325.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 430 Endocrinology Credits: 3 (3-0-0)
Course Description: Physiology of the glands of internal secretion.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 450 Pharmacology Credits: 3 (3-0-0)
Course Description: Pharmacologic principles, absorption, distribution, metabolism, excretion, side effects, and actions of drugs.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 460 Essentials of Pathophysiology Credits: 3 (3-0-0)
Course Description: Integration of different facets of mechanisms underlying health and disease.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 461 Pathophysiology Perspectives Credits: 2 (0-0-2)
Course Description: Capstone course in pathophysiology for Biomedical Sciences majors.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 460.
Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Work/research experience with an approved preceptor outside of a university laboratory.
Prerequisite: None.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Honors breakout session for students in Human Gross Anatomy.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed research in biomedical sciences.
Prerequisite: BMS 300 or BMS 360.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BMS 500 Mammalian Physiology I Credits: 4 (4-0-0)
Course Description: Cell physiology of nerve, skeletal, cardiac and smooth muscle with an emphasis on how cellular functions integrate into systems behavior.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Credit not allowed for both BMS 500 and NB 501. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 501 Mammalian Physiology II Credits: 4 (4-0-0)
Course Description: Respiratory, renal, digestive, endocrine, metabolic, and reproductive function.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 503 Developmental Neurobiology Credits: 3 (3-0-0)
Also Offered As: NB 503.
Course Description: Molecular mechanisms involved in development of nervous system including differentiation, growth, pathfinding, and synaptogenesis.
Prerequisite: (BIO 100 to 481 or BZ 100 to 481 or LIFE 100 to 481) and (BC 100 to 481 and PH 100 to 481) and (MATH 141 or MATH 155 or MATH 160 to 161 or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both BMS 503 and NB 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 505 Neuronal Circuits, Systems and Behavior Credits: 3 (3-0-0)
Also Offered As: NB 505.
Course Description: Anatomical and physiological organization of the nervous system.
Prerequisite: BMS 325 or BMS 500 or NB 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 521 Comparative Reproductive Physiology Credits: 3 (3-0-0)
Course Description: A comparative overview of reproduction in vertebrates (focusing on mammals) emphasizing both conserved and species-specific aspects of physiology.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 531 Domestic Animal Dissection Credits: 3 (0-9-0)
Course Description: Dissection of domestic animals.
Prerequisite: BMS 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 545 Neuroanatomy Credits: 5 (3-4-0)
Course Description: Nervous system structure and function presented from a systems perspective; applied and comparative aspects are emphasized.
Prerequisite: None.
Registration Information: Written consent of instructor required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 575 Human Anatomy Dissection Credits: 4 (0-8-0)
Course Description: Regional approach to human gross anatomy through laboratory dissection of human cadaver.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 610A Managing a Career in Science: Survival Skills for Coursework (M.S.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 610B Managing a Career in Research: Survival Skills for Research (M.S. and Ph.D.) Credit: 1 (1-0-0)
Course Description: Survival skills for professionals. How to succeed in science, including improving writing, teaching, speaking; finding the right job.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 619 Advanced Human Gross Anatomy Credits: 2 (0-0-2)
Course Description: Clinical application of human anatomy through case-based study.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 631 Mechanisms of Hormone Action Credits: 2 (2-0-0)
Course Description: Synthesis, secretion, and mechanisms of action of hormones.
Prerequisite: BMS 430 or BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
BMS 632 Metabolic Endocrinology Credits: 2 (2-0-0)
Course Description: Endocrine regulation of metabolic homeostasis; effects of exercise or pregnancy.
Prerequisite: BMS 631.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 633 Domestic Animal Anatomy-Case Discussions Credits: 2 (0-0-2)
Course Description: Clinical case discussions utilized in advanced understanding of domestic animal anatomy and physiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in BMS 531.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 640 Reproductive Physiology and Endocrinology Credits: 4 (4-0-0)
Course Description: Reproductive physiology and endocrinology of vertebrate animals.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 642 Research Techniques for Gametes and Embryos Credit: 1 (0-3-0)
Course Description: Collection, storage, evaluation, in vitro manipulation, and replacement of sperm, oocytes, embryos, and other reproductive tissues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 692 Seminar-Classics in Neurosciences Credit: 1 (0-0-1)
Course Description: Review of classic papers in the neurosciences.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695A Independent Study: Developmental Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Developmental Anatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695B Independent Study: Microscopic Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Microscopic Anatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695C Independent Study: Neuroanatomy Credits: Var[1-18] (0-0-0)
Course Description: Neuroanatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695D Independent Study: Radiographic Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Radiographic Anatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695E Independent Study: Surgical Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Surgical Anatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695F Independent Study: Gross Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Gross Anatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 696 Group Study-Neurosciences Credits: Var[1-3] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
**BMS 699** Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

**BMS 784** Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 792A** Seminar: Biomedical Sciences Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 792B** Seminar: Neurophysiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 792C** Seminar: Reproductive Physiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 795A** Independent Study: Endocrinology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 795B** Independent Study: Neurophysiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 795C** Independent Study: Cell Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 795D** Independent Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 795E** Independent Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 796A** Group Study: Topics in Neuroscience Credits: Var[1-4] (0-0-0)
Also Offered As: NB 796C.
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. May not be taken concurrently with NB 796C.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 796B** Group Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 796C** Group Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**BMS 799** Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

**Biotechnology-BTEC (BTEC)**
Courses

BTEC 306 Bioprocess Engineering Credits: 4 (3-2-0)
Also Offered As: BIOM 306.
Course Description: Material, energy balances; fluid flow, heat exchange, mass transfer; application to operations in food, fermentation, other bioprocess industries.
Prerequisite: (CHEM 107 or CHEM 111) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BTEC 306 and BIOM 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BTEC 499 Biotechnology Thesis Credits: Var[1-3] (0-0-0)
Course Description: None.
Registration Information: Twelve credits from biotechnology core. Approval of program coordinator.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Botany/Zoology-BZ (BZ)

Courses

BZ 100 Introduction to Biology Credits: 3 (0-0-3)
Course Description: Basic concepts in biology, including genetics, the human body, and interactions with their environment.
Prerequisite: None.
Registration Information: Offered as a telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 101 Humans and Other Animals (GT-SC2) Credits: 3 (3-0-0)
Course Description: Characteristics of animals, their evolution and diversity; humans considered as an animal.
Prerequisite: None.
Registration Information: Credit not allowed for students who have already taken BZ 110 or LIFE 102 or LIFE 103. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 104 Basic Concepts of Plant Life (GT-SC2) Credits: 3 (3-0-0)
Course Description: Broad concepts of biology with major emphasis on plant life.
Prerequisite: None.
Registration Information: For non-science and physical science majors. Credit not allowed for students who have already taken BZ 120 or LIFE 102 or LIFE 103.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 105 Basic Concepts of Plant Life Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Modern biology exercises including viruses, Monera, Protista, fungi, plants, genetics, physiology, and ecology.
Prerequisite: BZ 104, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC1).

BZ 110 Principles of Animal Biology (GT-SC2) Credits: 3 (3-0-0)
Course Description: General features (body form, physiology, life history, ecology) and evolutionary relationships of major phyla of animals.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BZ 111 Animal Biology Laboratory (GT-SC1) Credit: 1 (0-3-0)
Course Description: Laboratory exercises demonstrating major features of animal biology and major phyla of animals.
Prerequisite: BZ 110, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 120 Principles of Plant Biology (GT-SC1) Credits: 4 (3-3-0)
Course Description: Diversity of relationships of plants and their structural and functional characteristics.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

BZ 212 Animal Biology-Invertebrates Credits: 4 (3-3-0)
Course Description: General biology of invertebrates; their characteristics, classification, and adaptations.
Prerequisite: LIFE 103 or BZ 110 and BZ 111.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 214 Animal Biology-Vertebrates Credits: 4 (3-3-0)
Course Description: General biology of vertebrates; their characteristics, classification, and adaptations.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
BZ 220 Introduction to Evolution  Credits: 3 (3-0-0)
Course Description: Fundamental concepts in evolutionary biology.
Prerequisite: BZ 110 or BZ 120 or LIFE 103.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 223 Plant Identification  Credits: 3 (2-2-0)
Course Description: Relationships and identification of flowering plants.
Prerequisite: BZ 120 or LIFE 103
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 296 Group Study-Biology  Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 300 Animal Behavior  Credits: 3 (3-0-0)
Course Description: Principles of ethology, behaviors of nonhuman animals emphasizing their adaptive significance and phylogenetic relationships.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 301 Animal Behavior Laboratory  Credits: 2 (0-4-0)
Course Description: Laboratory experiments in animal behavior; demonstrations and independent investigations.
Prerequisite: BZ 300, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 302 Poisonous Plants  Credits: 3 (2-2-0)
Course Description: Identification and toxic properties of certain plants; animal reactions to more important ones.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 310 Cell Biology  Credits: 4 (3-3-0)
Course Description: Structure and function of cells emphasizing molecular mechanisms. Communication, metabolism, motility, genetics, growth, and reproduction.
Prerequisite: (BZ 110 or BZ 120 or LIFE 103) and (CHEM 245 with a minimum grade of C or CHEM 341 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 311 Developmental Biology  Credits: 4 (3-2-0)
Course Description: Developmental aspects of growth and differentiation stressed in higher plants and animals.
Prerequisite: BZ 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 321 Aquatic Vascular Plants  Credits: 3 (1-4-0)
Course Description: Taxonomic relationships and identification of aquatic vascular plants.
Prerequisite: BZ 223 or BZ 325.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 325 Plant Systematics  Credits: 4 (3-2-0)
Course Description: Principles and contemporary methods of classification of plants, and the application of modern phylogenetic theory in comparative biology.
Prerequisite: BZ 220.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 329 Herpetology  Credits: 3 (2-2-0)
Course Description: Biology of amphibians and reptiles.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 330 Mammalogy  Credits: 3 (2-2-0)
Course Description: Evolution, classification, and biology of mammals; practice in identifying and preparing specimens.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 331 Developmental Plant Anatomy  Credits: 4 (2-4-0)
Course Description: Structure of plant cells, tissues, and organs as they develop.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 332 Introductory Phycology  Credits: 4 (3-2-0)
Course Description: Evolution, diversity, ecology and global impact of algae.
Prerequisite: (BZ 120 or LIFE 102) and (BZ 220).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
BZ 333  Introductory Mycology  Credits: 4 (2-4-0)
Course Description: Groups of fungi including classification, structure, morphogenesis, phylogeny, and genetics and reproduction.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 335  Ornithology  Credits: 3 (2-3-0)
Course Description: Biology of birds, especially behavior, ecology, and identification in the laboratory and field.
Prerequisite: BZ 111 and BZ 110 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 338  Comparative Morphology of Vascular Plants  Credits: 4 (2-4-0)
Course Description: Origin, evolution, structure, and reproduction of the vascular plants, including comparative study of organs occurring in each group.
Prerequisite: BZ 120 or LIFE 103.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 346  Population and Evolutionary Genetics  Credits: 3 (3-0-0)
Course Description: Evolutionary theories and history; heredity mechanisms that are basis for variation, evolution, and biological communication between generations.
Prerequisite: (BZ 220) and (MATH 155) and (STAT 301 or STAT 307 or ERHS 307).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 348  Theory of Population and Evolutionary Ecology  Credits: 4 (3-3-0)
Also Offered As: MATH 348.
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 348, BZ 548, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 349  Tropical Ecology and Evolution  Credits: 3 (3-0-0)
Course Description: Broad introduction to terrestrial and aquatic tropical biodiversity and the ecological and evolutionary processes that generate and maintain it.
Prerequisite: BZ 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 350  Molecular and General Genetics  Credits: 4 (3-0-1)
Course Description: Mendelian, molecular, and population genetics emphasizing the molecular basis of genetics.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (STAT 201, may be taken concurrently or STAT 301, may be taken concurrently or STAT 307, may be taken concurrently or ERHS 307, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Primarily for students in biological sciences.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 353  Global Change Ecology, Impacts and Mitigation  Credits: 3 (3-0-0)
Also Offered As: NR 353.
Course Description: Ecological impacts of human-induced global change, and the strategies that can be used to adapt to and mitigate these impacts.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BZ 353 and NR 353.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 360  Bioinformatics and Genomics  Credits: 3 (3-0-0)
Course Description: Genomics, bioinformatics, and basic computer programming for biologists.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 384  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Primarily for students in biological sciences.
Prerequisite: None.
Registration Information: 3.0 overall GPA; written consent of instructor; grade of A in course with which student assists. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 401  Comparative Animal Physiology  Credits: 3 (3-0-0)
Course Description: Physiological mechanisms of digestion, metabolism, osmoregulation, excretion, circulation, and respiration in vertebrate and invertebrate animals.
Prerequisite: BZ 214.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 402  Molecular Cytogenetics  Credits: 4 (3-3-0)
Course Description: Structure, function, and behavior of chromosomes during interphase, mitosis, and meiosis.
Prerequisite: (BZ 310, may be taken concurrently or LIFE 210, may be taken concurrently) and (BZ 350, may be taken concurrently or LIFE 210A, may be taken concurrently or LIFE 210B, may be taken concurrently or SOC 330, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BZ 433 Behavioral Genetics Credits: 4 (3-0-1)
Course Description: An integrative view of genetic basis of animal behavior, with emphasis on complex behaviors and societal implications of genetics research.
Prerequisite: BZ 310.

Registration Information: Must register for lecture and recitation. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.

Special Course Fee: No.

BZ 450 Plant Ecology Credits: 4 (3-2-0)
Course Description: Relation of plants to their environment.
Prerequisite: LIFE 103 or BZ 120.

Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.

Special Course Fee: No.

BZ 455 Human Heredity and Birth Defects Credits: 3 (3-0-0)
Course Description: Human heredity and its individual and social implications; causes of congenital defects.
Prerequisite: BZ 110 and BZ 111 or LIFE 103.

Term Offered: Spring.
Grade Mode: Traditional.

Special Course Fee: No.

BZ 460 Genome Evolution Credits: 4 (3-0-1)
Course Description: Evolution of DNA, RNA, and proteins; use of genomic data to infer evolutionary history and processes.
Prerequisite: BZ 220 and BZ 350.

Term Offered: Spring.
Grade Mode: Traditional.

Special Course Fee: No.

BZ 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related anthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).

Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 462, BSPM 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.

Special Course Fee: No.
BZ 466  Biological Basis of Animal Behavior  Credits: 4 (3-2-0)
Course Description: An integrative view of mechanisms of animal behavior spanning genetics, neural systems, development, functional morphology, and evolution.
Prerequisite: (BMS 325 or BZ 310 or LIFE 210) and (STAT 301 or STAT 307).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 471  Stream Biology and Ecology  Credits: 3 (3-0-0)
Course Description: Biology and ecology of running waters.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 472  Stream Biology and Ecology Laboratory  Credit: 1 (0-3-0)
Course Description: Field sampling and laboratory analysis of habitats, biota, and ecological relationships in running waters.
Prerequisite: BZ 471, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 474  Limnology  Credits: 3 (2-2-0)
Course Description: Biology, chemistry, and physics of lakes including limnological methods.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

BZ 476  Genetics of Model Organisms  Credits: 3 (3-0-0)
Also Offered As: BZ 576.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 476 and BZ 576.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 479  Biology and Behavior of Dogs  Credits: 3 (3-0-0)
Also Offered As: VS 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: BZ 110 or LIFE 103.
Registration Information: Credit not allowed for both BZ 479 and VS 479. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 482A  Study Abroad: Field Marine Biology  Credits: 4 (0-0-4)
Course Description: Exposure to two of the most productive and biologically diverse marine areas in North America. Field sampling and exploration of marine ecosystems from levels of primary production to the top level predators. Students will learn a wide variety of hands on sampling techniques and data analyses with the goal of comparing the marine ecology of the Baja peninsula.
Prerequisite: BZ 415 and BZ 496.
Registration Information: Written consent of instructor. Students to apply through Office of International Programs. Junior Standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 487  Internship  Credits: Var[1-12] (0-0-0)
Course Description: Supervised work-related research experience in laboratory or field setting with consultation and approval of a regular faculty member.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492A  Seminar: Behavior  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492B  Seminar: Ecology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492C  Seminar: Genetics  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492D  Seminar: Ornithology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492E  Seminar: Herpetology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 492F  Seminar: Evolution  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BZ 492G Seminar: Departmental Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 7 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 496 Group Study—Biology Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed group investigation of areas of special interest in biology.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 498 Laboratory or Field Research Credits: Var[1-6] (0-0-0)
Course Description: Supervised laboratory or field research in biology, botany, or zoology.
Prerequisite: None.
Registration Information: Written consent of research mentor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 505 Cognitive Ecology Credits: 3 (3-0-0)
Course Description: The evolutionary ecology of mechanisms related to information processing and decision-making in animals.
Prerequisite: BZ 300.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 510 Zoophysiological Ecology Credits: 3 (3-0-0)
Course Description: Concepts, principles, and examples of adaptive physiological strategies used by animals.
Prerequisite: (BMS 300 or BMS 360 or BZ 401) and (LIFE 320 or LAND 220 or LIFE 220).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 515 Physiological Ecology of Marine Vertebrates Credits: 3 (3-0-0)
Course Description: Physiological adaptations of vertebrates to different marine environments.
Prerequisite: (BZ 214 and BZ 330) and (BC 351 or BC 401 or BMS 300 or BZ 401).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BSPM 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BZ 325 or BZ 424 or BSPM 424.
Registration Information: Credit not allowed for both BZ 520 and BSPM 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 525 Molecular Ecology Credits: 4 (3-0-1)
Course Description: Molecular genetic markers for questions in ecology, evolution, behavior, and conservation.
Prerequisite: (BZ 220 and BZ 350) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both BZ 525 and BZ 425.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BSPM 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Registration Information: Credit not allowed for both BZ 526 and BSPM 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 530 Ecological Plant Morphology Credits: 2 (2-0-0)
Course Description: Adaptive significance and evolution of plant form and structure.
Prerequisite: (BZ 220) and (LIFE 320 or BZ 450).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 535 Behavioral Ecology Credits: 3 (3-0-0)
Course Description: Evolutionary and theoretical perspectives in animal behavior using examples from model empirical systems; emphasis on decision rules and social behavior.
Prerequisite: BZ 220.
Registration Information: Graduate standing. Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 537 Topics in Mycology Credits: 3 (2-2-0)
Course Description: Features common to all fungi; trends in structure, function, and behavior.
Prerequisite: BZ 333.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
BZ 540  Translocation in Plants  Credits: 2 (2-0-0)
Course Description: Transport of sugars, organic and inorganic ions, water, and hormones across membranes and through vascular systems of plants.
Prerequisite: BZ 331 and BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 544  Presenting Research in Biology  Credits: 2 (2-0-0)
Course Description: Procedures for preparing and presenting results of biological research in scientific journals and at professional meetings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BZ 548  Theory of Population and Evolutionary Ecology  Credits: 4 (3-3-0)
Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology; research module.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BZ 548, BZ 348, MATH 348.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 555  Reproductive Biology of Higher Plants  Credits: 3 (3-0-0)
Course Description: Reproductive processes influencing evolution in higher plant groups.
Prerequisite: (BZ 310 or LIFE 210) and (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 561  Landscape Ecology  Credits: 3 (3-0-0)
Course Description: Concepts, methods, and models for examining spatial patterns and processes of natural and managed landscapes and their effects on ecological dynamics.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 570  Molecular Aspects of Plant Development  Credits: 3 (3-0-0)
Course Description: Various aspects of plant development at the molecular level.
Prerequisite: BC 463 or BZ 350 or MIP 450 or SOCR 330.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 572  Phytoremediation  Credits: 3 (3-0-0)
Course Description: Environmental cleanup using plants.
Prerequisite: BZ 120 or LIFE 103.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 574  Presenting Research in Biology  Credits: 2 (2-0-0)
Course Description: Procedures for preparing and presenting results of biological research in scientific journals and at professional meetings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 575  Molecular and Genomic Evolution  Credits: 3 (3-0-0)
Also Offered As: BSPM 575.
Course Description: Molecular, biological mechanisms of evolutionary change: mutation; selection; gene expression/regulation; changes in whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BZ 575 and BSPM 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 576  Genetics of Model Organisms  Credits: 4 (3-0-1)
Also Offered As: BZ 476.
Course Description: Advanced topics in model genetic systems including molecular and developmental genetics.
Prerequisite: BZ 350 or LIFE 201A or LIFE 201B or SOCR 330.
Registration Information: Junior standing. Credit not allowed for both BZ 576 and BZ 476.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 577  Computer Analysis in Population Genetics  Credits: 2 (0-4-0)
Also Offered As: MIP 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: BZ 578, may be taken concurrently or MIP 578, may be taken concurrently.
Registration Information: Credit not allowed for both BZ 577 and MIP 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 578  Genetics of Natural Populations  Credits: 4 (3-0-1)
Also Offered As: MIP 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both BZ 578 and MIP 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BZ 584  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 587A  Internship: General  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BZ 587B Internship: Herbarium  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 594 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 642 Plant Metabolism  Credits: 3 (3-0-0)
Course Description: Biosyntheses and transformations of important plant metabolites.
Prerequisite: BC 351 and BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BZ 692A Seminar: Behavior  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692C Seminar: Ecology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692D Seminar: Genetics  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692E Seminar: Ornithology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692G Seminar: Evolution  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 692H Seminar: Departmental  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 695 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 698 Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 784 Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 792 Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 795 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BZ 798 Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BZ 799 Dissertation  Credits: Var[1-18]  (0-0-0)
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

Business-General-BUS (BUS)

Courses
BUS 100 Introduction to Business  Credit: 1  (1-0-0)
Course Description: Overview of functional areas of business: accounting, finance, information systems, management, marketing, and international business.  
Prerequisite: None.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 150 Business Computing Concepts and Applications  Credits: 3 (3-0-0)
Course Description: System hardware, operating environments, and software applications.  
Prerequisite: None.  
Registration Information: Credit not allowed for both BUS 150 and CS 110. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 201 Foundations of Sustainable Enterprise  Credit: 1  (1-0-0)
Course Description: Basics of sustainability in business and implications for business decision making.  
Prerequisite: None.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 205 Legal and Ethical Issues in Business  Credits: 3 (3-0-0)
Course Description: Ethical, legal and regulatory issues in the U.S. business environment.  
Prerequisite: None.  
Registration Information: Credit not allowed for both BUS 205 and BUS 260. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 220 Ethics in Contemporary Organizations (GT-AH3)  Credits: 3 (3-0-0)
Course Description: Examination and application of the ethical principles that are fundamental to managing a successful high-integrity business or organization.  
Prerequisite: CO 150 or HONR 193.  
Registration Information: Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

BUS 222 Interpersonal and Professional Skills  Credits: 2  (2-0-0)
Course Description: Development of effective interpersonal leadership skills built on self-awareness, understanding of others, and life experiences.  
Prerequisite: None.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 260 Social-Ethical-Regulatory Issues in Business  Credits: 3 (3-0-0)
Course Description: Legal issues, business ethics, corporate responsibility, and the business interface within the U.S. regulatory and business environment.  
Prerequisite: None.  
Registration Information: Credit not allowed for both BUS 260 and BUS 205.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 300 Business Writing and Communication (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Advanced writing for business using recursive process and appropriate means given audience and message purpose. Preparation, presentation of reports.  
Prerequisite: CO 150 or HONR 193.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

BUS 350 Travel Abroad-International Comparative Management  Credits: 3 (3-0-0)
Course Description: Travel tour of European business to compare and contrast their business strategies to those of U.S. firms.  
Prerequisite: None.  
Registration Information: Six credits of BUS courses.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 405A Contemporary Business Topics: Entrepreneurship  Credits: 3 (3-0-0)
Course Description:  
Prerequisite: FIN 305 and MKT 305 or FIN 305 and MGT 305 or MGT 305 and MKT 305.  
Registration Information: For nonbusiness majors only. Sections may be offered: Online.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

BUS 405B Contemporary Business Topics: International Business  Credits: 3 (3-0-0)
Course Description:  
Prerequisite: FIN 305 and MGT 305 or FIN 305 and MGT 305 and MGT 305 and MKT 305.  
Registration Information: For nonbusiness majors only.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
BUS 405C Contemporary Business Topics: Business Information Management Credits: 3 (3-0-0)
Course Description:
Prerequisite: FIN 305 and MGT 305 or FIN 305 and MKT 305 or MGT 305 and MKT 305.
Registration Information: For nonbusiness majors only.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 405D Contemporary Business Topics: Real Estate Credits: 3 (3-0-0)
Course Description: A broad study of real estate principles including brokerage, contracts, closings, land use, finance, market analysis, and valuation.
Prerequisite: FIN 305 and MGT 305 or FIN 305 and MKT 305 or MGT 305 and MKT 305.
Registration Information: For non-business majors only. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 479 Strategic Management Credits: 3 (3-0-0)
Course Description: An integration of various business subject areas in terms of top-level policy and decision making.
Prerequisite: (MGT 301) and (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 500 Business Systems and Processes Credits: 2 (2-0-0)
Course Description: Introduction to core concepts from Business Process Management (BPM) and Operations Management (OM).
Prerequisite: None.
Registration Information: Bachelor's degree and a 3.0 GPA or higher. This is a partial-semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 505 Legal and Ethical Environment of Business Credits: 3 (3-0-0)
Course Description: Legal and regulatory issues impacting business operation. Ethical and social responsibility concepts applied to business setting.
Prerequisite: None.
Registration Information: Admission to a master's program in Business required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 510 Career Assessment and Development Credit: 1 (1-0-0)
Course Description: Identify career goals based on personal skills, interests and values and understand how to compete in the global job market.
Prerequisite: None.
Registration Information: Admission to a master's program in Business required.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 515 Career Management and Placement Strategy Credit: 1 (1-0-0)
Course Description: Tools to create a career strategy and personal brand.
Prerequisite: None.
Registration Information: Admission to a master's program in Business required.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 601 Quantitative Business Analysis Credits: 2 (2-0-0)
Also Offered As: STAT 604.
Course Description: Introduction to statistical thinking and methods used to support managerial decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to MBA program required. Credit not allowed for both BUS 604 and STAT 604.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 604 Managerial Statistics Credits: 2 (2-0-0)
Also Offered As: STAT 604.
Course Description: Introduction to statistical thinking and methods used to support managerial decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to MBA program required. Credit not allowed for both BUS 604 and STAT 604.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 614 Accounting Concepts Credits: 2 (2-0-0)
Course Description: Introduction to financial statements; key concepts underlying their development and interpretation.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to MBA program required. Credit not allowed for both BUS 604 and STAT 604.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 615 Managerial Accounting Credits: 2 (2-0-0)
Course Description: Use of accounting information for purposes of management decision-making, planning, and control.
Prerequisite: BUS 614.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BUS 616  Financial Reporting and Analysis  Credits: 2 (2-0-0)
Course Description: Tools and techniques for analysis of financial reports of public companies.
Prerequisite: BUS 614 or BUS 615 taken after.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 620  Leadership and Teams  Credits: 2 (2-0-0)
Course Description: Ethical leadership and team dynamics; basic models of motivation utilized by leaders.
Prerequisite: BUS 500, may be taken concurrently or BUS 601 to 665 - at least 1 course taken after.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 621  Strategic Decision Making  Credits: 2 (2-0-0)
Course Description: Key decision concepts, processes, and tools that help managers formulate and implement competitive strategy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 625  Organizational Communication  Credits: 2 (2-0-0)
Course Description: Improving understanding and application of managerial communication skills and negotiation tools and their implications for effective management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 626  Managing Human Capital  Credits: 2 (2-0-0)
Course Description: Management of human capital for competitive advantage and superior results.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 630  Information Management  Credits: 2 (2-0-0)
Course Description: Role and value of information in business functions; risks and rewards of enterprise information; fundamentals of information storage and retrieval.
Prerequisite: (BUS 500 or BUS 601 to 665 - at least 1 course taken after) and (BUS 614 or BUS 615 taken after).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 631  Strategic Uses of Information Technology  Credits: 2 (2-0-0)
Course Description: Strategic and tactical uses of information technology in the global business environment.
Prerequisite: BUS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 635  Business Economics for the World Market  Credits: 2 (2-0-0)
Course Description: Application of economic principles to current business problems within context of global marketplace.
Prerequisite: (BUS 601) and (BUS 614 or BUS 615 taken after).
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 640  Financial Principles and Practice  Credits: 2 (2-0-0)
Course Description: Financial environment; tools and techniques of corporate financial decision making.
Prerequisite: (BUS 601) and (BUS 614).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 641  Financial Markets and Investments  Credits: 2 (2-0-0)
Course Description: Operating of financial markets, techniques for security valuation, and portfolio management.
Prerequisite: BUS 640, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 645  Enterprise Electronic Business Strategies  Credits: 2 (2-0-0)
Course Description: Technology for electronic commerce, regulation and strategies for competitive usage.
Prerequisite: BUS 630.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BUS 650 Supply Chain Management Credits: 2 (2-0-0)
Course Description: Value-driven supply chain principles, design and management of supply chains, and supply chain management software and applications.
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 655 Marketing Management Credits: 2 (2-0-0)
Course Description: Examines processes of customer value creation (e.g. product development, communications, distribution) and value capture (e.g. pricing).
Prerequisite: BUS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 656 Marketing Strategy and Planning Credits: 2 (2-0-0)
Course Description: Basic marketing strategy analysis, formulation, evaluation and implementation concepts and tools.
Prerequisite: BUS 640 and BUS 655.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 660 Ethical, Legal, and Regulatory Issues Credits: 2 (2-0-0)
Course Description: Legal, regulatory, societal and ethical issues encountered by business professionals; analytical skills for making judgments.
Prerequisite: BUS 500 or BUS 601 to 665 - at least 1 course taken after.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 662 International Business Credits: 2 (2-0-0)
Course Description: Role of government regulations and how international firms affected; cultural aspects of business, global marketing, finance, management.
Prerequisite: BUS 635.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 665 MBA Capstone Credits: 4 (4-0-0)
Course Description: To integrate business disciplines through strategic thinking and experiential learning.
Prerequisite: BUS 641 and BUS 650 and BUS 656.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 678 Business Research Credits: 3 (3-0-0)
Course Description: Techniques for designing, conducting, and evaluating business research.
Prerequisite: QNT 270.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BUS 686 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 687 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690A Contemporary Issues: Business Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690B Contemporary Issues: Grad Tutorials Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690C Contemporary Issues: Info Systems Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
BUS 690D Contemporary Issues: Accounting Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690E Contemporary Issues: Global Enterprise Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690F Contemporary Issues: Finance Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690G Contemporary Issues: Government Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 690H Contemporary Issues: Mgmt Practices Credits: Var[1-6] (0-0-0)
Course Description: Current issues in business, featuring business and community leaders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in Business required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional, Undergraduate.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BUS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Cell + Molecular Biology-CM (CM)

Courses
CM 501 Advanced Cell Biology Credits: 4 (4-0-0)
Course Description: Cell structure and organelle function.
Prerequisite: BZ 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 502 Techniques in Molecular & Cellular Biology Credits: 2 (1-3-0)
Also Offered As: NB 502.
Course Description: Current methods in molecular and cellular neurobiology.
Prerequisite: (BIO 100 to 481 - at least 4 credits or BZ 100 to 481 - at least 4 credits or LIFE 100 to 481 - at least 4 credits) and (BC 100 to 481 - at least 4 credits and PH 100 to 481 - at least 4 credits).
Registration Information: Written consent of instructor. Must register for lecture and laboratory. Credit not allowed for CM 502 and NB 502.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 510 Introduction to Cell and Molecular Biology Credit: 1 (1-0-0)
Course Description: Overview of CMB program and research opportunities; enhances writing and oral communication skills.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CM 520 Proteolytic Regulation of Cellular Processes Credits: 3 (2-0-1)
Course Description: Functions of proteolytic pathways in the regulation of eukaryotic cellular processes, such as mitosis, apoptosis, signal transduction and gene regulation.
Prerequisite: CM 501.
Registration Information: Must register for lecture and recitation. 
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CM 595 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CM 601 Responsible Conduct of Research in CMB Credit: 1 (0-0-1)
Course Description: Key aspects of responsible conduct of research and ethical considerations in cell and molecular biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the CMB graduate program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 640 Creative Science Writing Credits: 3 (3-0-0)
Course Description: Consideration of creative writing techniques and their relevance to traditional science/nature writing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 666 Science and Ethics Credits: 3 (3-0-0)
Also Offered As: PHIL 666.
Course Description: Ethical issues of research on humans and animals; biosafety; fraud and deception in science; genetic engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CM 666 and PHIL 666.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 700 Critical Analysis of Scientific Literature Credit: 1 (0-0-1)
Course Description: Presentation and discussion of current literature of cell and molecular biology. Content varies each semester to include the major focus groups.
Prerequisite: BC 565 and CM 510.
Registration Information: May be repeated for a maximum of 4 credits.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CM 701D Topics in Cell and Molecular Biology: Radiation Cytogenetics Credit: 1 (1-0-0)
Course Description:
Prerequisite: (BC 403 and MATH 255) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 701I Topics in Cell and Molecular Biology: Planning Research and Grant Proposals Credits: 2 (2-0-0)
Course Description:
Prerequisite: (BC 403 and MATH 255) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 702B Methods in Cell and Molecular Biology: Mammalian Cell Culture Techniques Credit: 1 (0-3-0)
Course Description:
Prerequisite: (BC 403) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 702C Methods in Cell and Molecular Biology: Immunoochemical Techniques Credit: 1 (0-3-0)
Course Description:
Prerequisite: (BC 403 and MATH 255) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 702D Methods in Cell and Molecular Biology: Radiation Cytogenetics Credit: 1 (0-3-0)
Course Description:
Prerequisite: (BC 403) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 702E Methods in Cell and Molecular Biology: Flow Cytometry and Cell Sorting Credits: 2 (0-4-0)
Course Description:
Prerequisite: (BC 403) and (CM 501).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 710 Techniques in Molecular Biology and Genetics Credits: 3 (0-4-1)
Also Offered As: BSPM 710.
Course Description: Genetic manipulation of bacteria, bacteriophage, and yeast including experiments in molecular cloning and gene expression.
Prerequisite: BC 463 or BZ 346 or BZ 350 or MIP 450 or SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation. Credit not allowed for both CM 710 and BSPM 710.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CM 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CM 792 Cell and Molecular Biology Seminar Credit: 1 (0-0-1)
Course Description: Preparation and presentation of cell and molecular biology seminars.
Prerequisite: CM 501, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
CM 793 Seminar Credit: 1 (0-0-1)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CM 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Chemical + Biological Engr-CBE (CBE)

Courses
CBE 101 Chemical and Biological Engineering I Credits: 3 (2-2-0)
Course Description: Engineering design and problem solving; technical presentation skills; basic computer programming.
Prerequisite: CBE 160, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
CBE 102 Chemical and Biological Engineering II Credits: 3 (2-2-0)
Course Description: Applications of engineering design and problem solving; computer programming to solve engineering problems; team project.
Prerequisite: CBE 101.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
CBE 160 MATLAB for Chemical and Biological Eng Credit: 1 (0-2-0)
Course Description: Introduction to MATLAB programming for Chemical and Biological Engineering applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CBE 201 Material and Energy Balances Credits: 3 (3-0-0)
Course Description: Principles of chemistry, physics, and mathematics applied to development of material and energy balances; illustration of concepts.
Prerequisite: (CBE 101 or CBE 160, may be taken concurrently or MATH 151, may be taken concurrently) and (LIFE 102, may be taken concurrently and CHEM 111 and PH 141, may be taken concurrently).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CBE 205 Introduction to Biological Engineering Credits: 3 (3-0-0)
Course Description: Introduction to the application of the principles of engineering and biology to the analysis, design, and optimization of bioprocesses.
Prerequisite: CBE 101 and CBE 160 and LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CBE 210 Thermodynamic Process Analysis Credits: 3 (3-0-0)
Course Description: Thermodynamic fundamentals and applications to ideal and non-ideal mixtures, power cycles, and chemical equilibria.
Prerequisite: CBE 201 with a minimum grade of C and MATH 261, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.
CBE 301 Molecular Concepts and Applications Credits: 3 (3-0-0)
Course Description: Application of modern molecular theory to chemical and biological engineering problems in thermodynamics, chemical kinetics, and transport phenomena.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CBE 320 Chemical and Biological Reactor Design Credits: 3 (3-0-0)
Course Description: Mechanisms and rates of chemical reactions; design of homogeneous and heterogeneous reactors; biological reactions and reactors.
Prerequisite: CBE 310 with a minimum grade of C and CBE 330 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CBE 330 Process Simulation Credits: 3 (3-0-0)
Course Description: Analysis of chemical and biological engineering problems by numerical simulation.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CBE 331 Momentum Transfer and Mechanical Separations Credits: 3 (3-0-0)
Course Description: Fluid properties; conservation equations; compressible and incompressible flow; pumping and metering; mixing; separation of fluid-solid mixtures.
Prerequisite: (CBE 210 with a minimum grade of C) and (MATH 340).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CBE 332 Heat and Mass Transfer Fundamentals  Credits: 3 (3-0-0)  
Course Description: Thermal processes; steady and unsteady conduction; convective heat transfer; radiation; heat exchanger design; mass transfer by diffusion and convection.  
Prerequisite: CBE 330 with a minimum grade of C and CBE 331 with a minimum grade of C and CBE 310 with a minimum grade of C.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CBE 333 Chemical and Biological Engineering Lab I  Credits: 2 (0-5-0)  
Course Description: Laboratory experiments involving material balances, thermodynamics, and momentum and heat transfer. Data analysis; written and oral reports.  
Prerequisite: CBE 332, may be taken concurrently.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

CBE 406 Introduction to Transport Phenomena  Credits: 3 (3-0-0)  
Course Description: Fundamental treatment of momentum and mass transport processes; dimensional analysis for parameter identification and order of magnitude estimation.  
Prerequisite: CBE 332.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

CBE 430 Process Control and Instrumentation  Credits: 3 (3-0-0)  
Course Description: Measurement and control of process variables; transient chemical and biological processes; feedback, feedforward, and computer control concepts.  
Prerequisite: CBE 320 with a minimum grade of C and CBE 442 with a minimum grade of C.  
Registration Information: Sections may be offered: Online.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

CBE 439 Environmental Engineering Chemical Concepts  Credits: 3 (2-3-0)  
Also Offered As: CIVE 439.  
Course Description: Application of chemical principles to environmental engineering problems.  
Prerequisite: CHEM 113 and MATH 340.  
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 439 and CIVE 439.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CBE 442 Separation Processes  Credits: 4 (4-0-0)  
Course Description: Analysis of chemical and biological separations based on thermodynamics, diffusion, and convective mass transfer; design of separations equipment.  
Prerequisite: CBE 332 with a minimum grade of C.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

CBE 443 Chemical and Biological Engineering Lab II  Credits: 2 (0-5-0)  
Course Description: Laboratory experiments involving advanced chemical and biological engineering concepts. Data analysis; written and oral reports.  
Prerequisite: CBE 442, may be taken concurrently or ENVE 442, may be taken concurrently.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  

CBE 451 Chemical and Biological Engineering Design I  Credits: 3 (3-0-0)  
Course Description: Chemical and biological process synthesis and simulation; engineering economics principles.  
Prerequisite: CBE 442, may be taken concurrently and CBE 320 with a minimum grade of C.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

CBE 452 Chemical and Biological Engineering Design II  Credits: 3 (2-2-0)  
Course Description: Projects requiring students to design a chemical and/or biological process with cost estimation and constraint analysis; written and oral reports.  
Prerequisite: CBE 451 with a minimum grade of C.  
Registration Information: Must register for lecture and laboratory.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

CBE 493 Professional Development Seminar  Credit: 1 (0-0-1)  
Course Description: Topics in engineering professional development, including ethics, role of engineers in society, and life-long learning.  
Prerequisite: None.  
Term Offered: Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CBE 495 Independent Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CBE 496 Group Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CBE 501 Chemical Engineering Thermodynamics  Credits: 3 (3-0-0)  
Course Description: Definition, correlation, and estimation of thermodynamic properties; nonideal chemical and physical equilibria.  
Prerequisite: CBE 202 and MATH 340.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.
CBE 502  Advanced Reactor Design  Credits: 3 (3-0-0)
Prerequisite: CBE 320 and CBE 332.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 503  Transport Phenomena Fundamentals  Credits: 3 (3-0-0)
Course Description: General topics in transport phenomena; analytical and numerical solutions of laminar flows; perturbation techniques; coupled transport.
Prerequisite: CBE 406.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 504  Fundamentals of Biochemical Engineering  Credits: 3 (3-0-0)
Also Offered As: BIOM 504.
Course Description: Application of chemical engineering principles to enzyme kinetics, fermentation and cell culture, product purification, and bioprocess design.
Prerequisite: (MIP 300) and (MATH 255 or MATH 340) and (BIOM 306, may be taken concurrently or BTEC 306, may be taken concurrently or CBE 320, may be taken concurrently).
Registration Information: Credit not allowed for both CBE 504 and BIOM 504.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 505  Biochemical Engineering Laboratory  Credit: 1 (0-3-0)
Course Description: Fermentation technology, bioprocess control, and protein purification.
Prerequisite: CBE 504, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CBE 514  Polymer Science and Engineering  Credits: 3 (3-0-0)
Course Description: Fundamentals of polymer science: synthesis, characterization, processing of polymers. Physical properties of polymers; rheology of melts and solutions.
Prerequisite: (CHEM 343 or CHEM 346) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 521  Mathematical Modeling for Chemical Engineers  Credits: 3 (3-0-0)
Course Description: Application of mathematical models to analysis and design of chemical reactors and separation processes.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 522  Bioseparation Processes  Credits: 3 (2-2-0)
Also Offered As: BIOM 522.
Course Description: Analysis of processes to recover and purify fermentation products.
Prerequisite: CBE 331.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CBE 522 and BIOM 522.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 524  Bioremediation  Credit: 1 (1-0-0)
Course Description: Use of biotechnology for site remediation. Biodegradation, bioreactor design, and in situ bioremediation.
Prerequisite: CBE 540 or CIVE 540.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 540  Advanced Biological Wastewater Processing  Credits: 3 (3-0-0)
Also Offered As: CIVE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Credit not allowed for both CBE 540 and CIVE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 543  Membranes for Biotechnology and Biomedicine  Credits: 3 (3-0-0)
Also Offered As: BIOM 543.
Course Description: Polymeric membrane formation, modification, module design and applications to bioseparation and biomedical separations and tissue engineering.
Prerequisite: CHEM 343 and CBE 310.
Registration Information: Credit not allowed for both CBE 543 and BIOM 543. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 570  Biomolecular Engineering/Synthetic Biology  Credits: 3 (3-0-0)
Course Description: Rational design and evolutionary methods for engineering functional protein and nucleic acid systems.
Prerequisite: (BC 351) and (CHEM 341 or CHEM 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 613  Advanced Transport Phenomena  Credits: 3 (3-0-0)
Course Description: Fundamental studies of multicomponent mass, energy, and momentum transport, with applications in advanced materials, biomedical and biochemical systems.
Prerequisite: (MATH 530) and (ATS 601 or CIVE 502 or CBE 503).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
CBE 621 Advanced Process Control Credits: 3 (3-0-0)
Course Description: Application of modern control theory to chemical processes. Computer control aspects emphasized.
Prerequisite: CBE 430.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CBE 660 System and Parameter Identification Credits: 3 (3-0-0)
Course Description: Principles and methods for selecting the most appropriate equations, and properties within those equations, to mathematically simulate physical phenomena.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CBE 693 Seminar I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 707 Advanced Topics in Biochemical Engineering Credit: 1 (1-0-0)
Course Description: Advanced biochemical engineering topics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CBE 793 Seminar II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CBE 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Chemistry-CHEM (CHEM)

Courses
CHEM 103 Chemistry in Context (GT-SC2) Credits: 3 (3-0-0)
Course Description: Chemistry, chemical principles from more conceptual, less mathematical perspective; how chemical substances, chemical reactions affect our daily lives.
Prerequisite: None.
Registration Information: For students who do not plan to take additional courses in chemistry. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 104 Chemistry in Context Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles covered in CHEM 103.
Prerequisite: CHEM 103, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 105 Problem Solving in General Chemistry Credits: 2 (1-0-1)
Course Description: Foundational problem-solving skills in general chemistry to support students for later success in general chemistry courses.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Placement out of MATH 118. This is a partial semester course. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
CHEM 107 Fundamentals of Chemistry (GT-SC2) Credits: 4 (4-0-0)
Course Description: Atomic/molecular theory, gases, liquids, solids, solutions, acid/base and oxidation/reduction reactions, kinetics, selected topics. Quantitative reasoning but with less focus on mathematical calculations than CHEM 111/ CHEM 113.
Prerequisite: MATH 117 or MATH 141, may be taken concurrently or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently.
Registration Information: For students in science-related programs requiring one semester of general chemistry. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

CHEM 108 Fundamentals of Chemistry Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Laboratory applications of principles presented in CHEM 107.
Prerequisite: CHEM 107, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 108 and CHEM 112.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 111 General Chemistry I (GT-SC2) Credits: 4 (3-0-1)
Course Description: Fundamental aspects of chemistry and chemical principles; emphasis on structure, bonding, and stoichiometry.
Prerequisite: (MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261) and (CHEM 105).
Registration Information: CHEM 105 or an appropriate score in the CHEM preparation course. Must register for lecture and recitation. Intended for science majors. Students should complete the sequence CHEM 111, CHEM 112, CHEM 113, and CHEM 114. Credit allowed for only one of the following: CHEM 111, CHEM 107, or CHEM 117.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC2).

CHEM 112 General Chemistry Lab I (GT-SC1) Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 111.
Prerequisite: CHEM 111, may be taken concurrently or CHEM 117, may be taken concurrently.
Registration Information: Credit not allowed for both CHEM 112 and CHEM 108.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

CHEM 113 General Chemistry II Credits: 3 (3-0-0)
Course Description: Acid/base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry, selected topics.
Prerequisite: (CHEM 107 or CHEM 111 or CHEM 117) and (MATH 124 or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently or MATH 161, may be taken concurrently or MATH 229, may be taken concurrently or MATH 261, may be taken concurrently or MATH 141).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 114 General Chemistry Lab II Credit: 1 (0-3-0)
Course Description: Laboratory applications of principles covered in CHEM 113.
Prerequisite: CHEM 112 and CHEM 113, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CHEM 115 General Chemistry II Recitation Credit: 1 (0-0-1)
Course Description: Problem solving applied to topics in, e.g., acid/base equilibria, kinetics, thermodynamics, solubility, oxidation-reduction reactions, electrochemistry.
Prerequisite: None.
Registration Information: Must have concurrent registration in CHEM 113.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 117 General Chemistry I for Chemistry Majors Credits: 3 (3-0-0)
Course Description: Fundamental aspects of chemistry and chemical principles, with an emphasis placed on atomic and molecular structure, bonding and stoichiometry.
Prerequisite: MATH 118 or MATH 141 or MATH 155 or MATH 160 or MATH 161 or MATH 229 or MATH 261.
Registration Information: Must have concurrent registration in CHEM 192. Credit allowed for only one of the following: CHEM 107, CHEM 111, or CHEM 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 192 Introductory Seminar in Chemistry Credit: 1 (0-0-1)
Course Description: Small-group discussions of aspects of chemistry.
Prerequisite: None.
Registration Information: Must have concurrent registration in CHEM 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 245 Fundamentals of Organic Chemistry Credits: 4 (4-0-0)
Course Description: Nomenclature, structure, bonding, reactions, mechanisms, synthesis, stereochemistry of organic compounds.
Prerequisite: CHEM 107 or CHEM 113.
Registration Information: Intended for students in science-related programs requiring one semester of organic chemistry. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 246  Fundamentals of Organic Chemistry Laboratory  Credit:  
1 (0-3-0)  
Course Description: Laboratory applications of principles presented in CHEM 245.  
Prerequisite: (CHEM 108 or CHEM 112 or CHEM 114) and (CHEM 245, may be taken concurrently).  
Registration Information: Credit not allowed for students who have already taken CHEM 344.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  

CHEM 261  Fundamentals of Inorganic Chemistry  Credits: 3 (3-0-0)  
Course Description: Preparation, structures, properties, and reactions of chemical elements and inorganic compounds; periodic trends, organizing principles; applications.  
Prerequisite: CHEM 113, may be taken concurrently.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 301  Advanced Scientific Writing--Chemistry (GT-CO3)  Credits: 3 (1-4-0)  
Course Description: Advanced scientific writing using the read-analyze-write approach and scientific poster preparation and presentation.  
Prerequisite: (CO 150) and (CHEM 334 or CHEM 345).  
Registration Information: CHEM 334 or CHEM 345 or a 300-level science laboratory course with written approval of instructor; CO 150. Must register for lecture and laboratory.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).  

CHEM 311  Introduction to Nanoscale Science  Credits: 3 (3-0-0)  
Course Description: Synthesis, characterization, and applications of nanoscale materials.  
Prerequisite: (CHEM 113) and (CHEM 346 or CHEM 343).  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 320  Chemistry of Addictions  Credits: 3 (3-0-0)  
Course Description: Chemical processes of addiction; receptor binding, molecular deactivation, and feedback in the context of protein-substrate molecular interactions.  
Prerequisite: CHEM 103 or CHEM 107 or CHEM 111.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 334  Quantitative Analysis Laboratory  Credit: 1 (0-3-0)  
Course Description: Laboratory applications of principles presented in CHEM 335.  
Prerequisite: CHEM 114 and CHEM 335, may be taken concurrently.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  

CHEM 335  Introduction to Analytical Chemistry  Credits: 3 (3-0-0)  
Course Description: Modern and classical applications and methods in analytical chemistry including statistical, kinetic, spectroscopic, and chromatographic analysis.  
Prerequisite: CHEM 113 with a minimum grade of C and CHEM 334, may be taken concurrently.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 338  Environmental Chemistry  Credits: 3 (3-0-0)  
Course Description: Processes that control the fate of chemicals in the environment. Focus on the chemistry of the atmosphere, hydrosphere, and soils, especially as it pertains to pollution of these environmental compartments. Topics covered in the course may include smog and air pollution, ocean acidification, acid mine drainage, pesticide chemistry, and heavy metal contamination.  
Prerequisite: (CHEM 113) and (CHEM 245 or CHEM 341).  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 341  Modern Organic Chemistry I  Credits: 3 (3-0-0)  
Course Description: Structures, nomenclature, dynamics, spectroscopy, and reactions of organic molecules.  
Prerequisite: CHEM 113.  
Registration Information: Credit allowed for only one of the following: CHEM 341, CHEM 245, and CHEM 345.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 343  Modern Organic Chemistry II  Credits: 3 (3-0-0)  
Course Description: Continued studies of reactions and mechanisms of organic molecules and biological chemistry.  
Prerequisite: CHEM 245 or CHEM 341 or CHEM 345.  
Registration Information: Credit not allowed for both CHEM 343 and CHEM 346.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 344  Modern Organic Chemistry Laboratory  Credits: 2 (0-6-0)  
Course Description: Laboratory applications of modern organic chemistry.  
Prerequisite: CHEM 114 and CHEM 343, may be taken concurrently.  
Registration Information: Intended for science majors. Credit not allowed for both CHEM 344 and CHEM 246.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: Yes.  

CHEM 345  Organic Chemistry I  Credits: 4 (3-3-0)  
Course Description: Structure, nomenclature, dynamics, spectroscopy, reactions of organic molecules. Laboratory applications of principles presented in lecture.  
Prerequisite: CHEM 113 and CHEM 114.  
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345, CHEM 346. Credit allowed for only one of the following: CHEM 245, CHEM 341, and CHEM 345.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: Yes.
CHEM 346 Organic Chemistry II Credits: 4 (3-3-0)
Course Description: Continue studies of reactions and mechanisms of organic molecules. Laboratory applications of principles presented in lecture.
Prerequisite: CHEM 345.
Registration Information: Chemistry majors only. Must register for lecture and laboratory. Students should plan to complete the sequence CHEM 345 and CHEM 346. Credit not allowed for both CHEM 343 and CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: CHEM 100 to 499 - at least 20 credits.
Registration Information: Written consent of department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, CHEM 498. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CHEM 431 Instrumental Analysis Credits: 4 (3-3-0)
Course Description: Instrumental methods of chemical analysis.
Prerequisite: (CHEM 334) and (CBE 310, may be taken concurrently or CHEM 474, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
CHEM 433 Clinical Chemistry Credits: 3 (2-3-0)
Course Description: Principles and methodology of clinical chemistry. Laboratory experience in methodology and method development.
Prerequisite: (CHEM 334) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.
CHEM 440 Advanced Organic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Advanced techniques in organic synthesis, mechanisms of reactions, structure determination.
Prerequisite: CHEM 344 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
CHEM 461 Inorganic Chemistry Credits: 3 (3-0-0)
Course Description: Concepts, models to explain structural, spectroscopic, magnetic, thermodynamic, and kinetic properties of inorganic compounds; symmetry, group theory.
Prerequisite: (CHEM 261) and (CBE 310 or CHEM 474).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 462 Inorganic Chemistry Laboratory Credits: 2 (0-6-0)
Course Description: Synthetic techniques and instrumental methods in inorganic chemistry.
Prerequisite: CHEM 461, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
CHEM 473 Foundations of Physical Chemistry Credits: 4 (4-0-0)
Course Description: Quantum chemistry; molecular structure and spectroscopy; equilibrium thermodynamics; kinetics.
Prerequisite: (CHEM 113) and (MATH 161 or MATH 255) and (PH 122 or PH 142).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 474 Physical Chemistry I Credits: 3 (3-0-0)
Course Description: Quantum chemistry; applications to bonding, molecular structure, and spectroscopy.
Prerequisite: (CHEM 113) and MATH 261 and PH 142.
Registration Information: Credit not allowed for both CHEM 473 and CHEM 474.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 475 Physical Chemistry Laboratory I Credit: 1 (0-3-0)
Course Description: Physicochemical experiments; emphasis on quantum mechanics/spectroscopy; interpretation/presentation of data; formal lab reports.
Prerequisite: (CBE 310, may be taken concurrently or CHEM 473, may be taken concurrently or CHEM 474, may be taken concurrently) and (CHEM 334).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
CHEM 476 Physical Chemistry II Credits: 3 (3-0-0)
Course Description: Statistical thermodynamics; applications to phase and chemical equilibria; kinetics.
Prerequisite: CHEM 474.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 477 Physical Chemistry Laboratory II Credit: 1 (0-3-0)
Course Description: Physiochemical experiments; emphasis on thermodynamics/statistical mechanics/kinetics; interpretation/presentation of data; formal lab reports.
Prerequisite: CHEM 475.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Supervised work experience in approved off-campus chemical laboratory setting. Consultation with faculty adviser/instructor.
Prerequisite: CHEM 476.
Registration Information: Maximum of 12 credits allowed for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CHEM 493 Seminar Credits: 2 [0-0-2]  
Course Description: Critical analysis of selected literature; develop presentation of technical topic; required oral presentation.  
Prerequisite: CHEM 474.  
Term Offered: Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CHEM 498 Research Credits: Var[1-3] [0-0-0]  
Course Description: Supervised laboratory research in chemistry; written report consistent with ACS guidelines required.  
Prerequisite: CHEM 100 to 499 - at least 9 credits.  
Registration Information: Written consent of research mentor and department chair. Maximum of 12 credits for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.  
Term Offered: Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

CHEM 511 Solid State Chemistry Credits: 3 [3-0-0]  
Course Description: Physical and descriptive chemistry of solids including characterization and synthetic methods.  
Prerequisite: CHEM 461 and CHEM 476.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 515 Polymer Chemistry Credits: 3 [3-0-0]  
Course Description: Fundamentals of polymer chemistry: synthesis, characterization, physical properties.  
Prerequisite: CHEM 346 and CHEM 476.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 517 Chemistry of Electronic Materials Credits: 3 [3-0-0]  
Course Description: Chemical aspects of preparation and processing of materials in electronic devices, "molecular electronics," and nanostructured materials.  
Prerequisite: CHEM 571, may be taken concurrently.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 521 Principles of Chemical Biology Credits: 3 [3-0-0]  
Also Offered As: BC 521.  
Course Description: Principles of chemical biology. Chemical methods for understanding and controlling the structure and function of biopolymers.  
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.  
Registration Information: Credit not allowed for both CHEM 521 and BC 521.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 522 Methods of Chemical Biology Credits: 2 [2-0-0]  
Course Description: Approaches to quantitative chemical biology, visualization, study and characterization of macromolecules and macromolecular-dependent processes.  
Prerequisite: BC 351 with a minimum grade of B or BC 401 with a minimum grade of B.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 530A Advanced Topics in Chemical Analysis: Environmental Chemical Analysis Credit: 1 [0-0-0]  
Course Description:  
Prerequisite: CHEM 431, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 530B Advanced Topics in Chemical Analysis: Absorption and Emission Spectroscopy Credit: 1 [0-0-0]  
Course Description:  
Prerequisite: CHEM 431, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 530C Advanced Topics in Chemical Analysis: Bioanalytical Chemistry Credit: 1 [0-0-0]  
Course Description:  
Prerequisite: CHEM 431, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 530D Advanced Topics in Chemical Analysis: Statistical Analysis in Analytical Chemistry Credit: 1 [0-0-0]  
Course Description:  
Prerequisite: CHEM 431, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 530E Advanced Topics in Chemical Analysis: Mass Spectrometry Credit: 1 [0-0-0]  
Course Description:  
Prerequisite: CHEM 431, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 530F Advanced Topics in Chemical Analysis: Analysis of Materials Credit: 1 [0-0-0]  
Course Description:  
Prerequisite: CHEM 431, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

CHEM 532 Advanced Chemical Analysis II Credits: 3 [3-0-0]  
Course Description: Advanced optics; instrumentation and methodology for analytical spectroscopy; computer applications.  
Prerequisite: CHEM 431.  
Grade Mode: Traditional.  
Special Course Fee: No.
CHEM 533  Chemical Separations  Credits: 3 (3-0-0)
Course Description: Fundamentals and applications of chemical separations.
Prerequisite: CHEM 335 and CHEM 431.
Terms Offered: Fall, Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 537  Electrochemical Methods  Credits: 3 (3-0-0)
Course Description: Theory and methods of electrochemistry; applications of modern electrochemical techniques.
Prerequisite: CHEM 431.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539A  Principles of NMR and MRI: Basic NMR Principles  Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 539B  Principles of NMR and MRI: NMR Diffusion Measurements-2D NMR and MRI  Credit: 1 (1-0-0)
Course Description:
Prerequisite: CHEM 474.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 541  Organic Molecular Structure Determination  Credits: 2 (2-0-0)
Course Description: Determination of organic molecular structure by spectroscopic methods.
Prerequisite: CHEM 440.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 543  Structure/Mechanisms in Organic Chemistry  Credits: 2 (2-0-0)
Course Description: Structure including stereochemistry and conformational isomerism; reactivity and mechanisms in organic chemistry.
Prerequisite: CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 544  Synthetic Organic Chemistry I  Credits: 3 (3-0-0)
Course Description: Reactions and synthesis in organic chemistry.
Prerequisite: CHEM 543.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 547  Physical Organic Chemistry  Credits: 3 (3-0-0)
Course Description: Mechanisms, theory, kinetics, and thermodynamics.
Prerequisite: CHEM 543.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 548  Organometallics in Synthesis  Credits: 2 (2-0-0)
Course Description: Fundamental aspects of organometallic chemistry applied to organic synthesis.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 549  Synthetic Organic Chemistry II  Credits: 2 (2-0-0)
Course Description: Strategies for the total synthesis of natural products.
Prerequisite: CHEM 545.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550A  Materials Chemistry: Hard Materials  Credit: 1 (1-0-0)
Course Description: Structure and bonding; crystallography; properties; synthesis; characterization of metals, semiconductors, and network solids.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550B  Materials Chemistry: Soft Materials  Credit: 1 (1-0-0)
Course Description: Structure and bonding, mechanisms, properties, applications, synthesis, characterization of polymers, complex fluids, and biomaterials.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 550C  Materials Chemistry: Nanomaterials  Credit: 1 (1-0-0)
Course Description: Structure and bonding, synthesis, properties, characterization of carbon nanotubes, metal and semiconductor nanocrystals, and nanocomposites.
Prerequisite: (CHEM 343 or CHEM 346) and (CHEM 461 and CHEM 476).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 551  Organometallic Chemistry  Credits: 3 (3-0-0)
Course Description: Descriptive and mechanistic organometallic chemistry applied to homogeneous catalysis and organic synthesis.
Prerequisite: CHEM 346.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 555  Chemistry of Sustainability  Credits: 3 (3-0-0)
Course Description: The central role of chemistry for achieving sustainability in key areas including chemicals and materials, energy, and environment.
Prerequisite: (BC 411 or CBE 310 or CHEM 476) and (CHEM 343 or CHEM 346).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 560 Foundations of Inorganic Synthesis  Credit: 1 (1-0-0)
Course Description: Preparation for advanced studies in metal-mediated chemistry; essential aspects of inorganic structure, thermodynamics and reactivity
Prerequisite: CHEM 461.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 561 Inorganic Synthesis  Credits: 2 (2-0-0)
Course Description: Chemistry of compounds of representative elements and transition metals.
Prerequisite: CHEM 560, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563A Physical Methods in Inorganic Chemistry: Group Theory  Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563B Physical Methods in Inorganic Chemistry: Vibrational Spectroscopy  Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563C Physical Methods in Inorganic Chemistry: Electronic Structure and Magnetism  Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563D Physical Methods in Inorganic Chemistry: Magnetic Spectroscopies  Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563E Physical Methods in Inorganic Chemistry: Advanced Nuclear Magnetic Resonance Spectroscopy  Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 563F Physical Methods in Inorganic Chemistry: Other Structural Methods  Credit: 1 (1-0-0)
Course Description: Modern experimental methods in inorganic chemistry.
Prerequisite: CHEM 461.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 565 Inorganic Mechanisms  Credits: 3 (3-0-0)
Course Description: Fundamental tools, key principles, selected classic case histories of inorganic and organometallic mechanistic chemistry, emphasizing kinetic methods.
Prerequisite: CHEM 476.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 566 Bioinorganic Chemistry  Credits: 3 (3-0-0)
Course Description: Biological-inorganic chemistry, including key principles, prototype systems, classic papers, and problems.
Prerequisite: CHEM 461.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 567 Crystallographic Computation  Credit: 1 (1-0-0)
Course Description: Theory and practice of structural computations using single crystal X-ray diffraction data.
Prerequisite: CHEM 474 with a minimum grade of C-.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 569 Chemical Crystallography  Credits: 3 (3-0-0)
Course Description: Theory and practice of determination of crystal and molecular structure by single crystal X-ray and neutron diffraction.
Prerequisite: CHEM 474.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 570 Chemical Bonding  Credits: 3 (3-0-0)
Course Description: Electronic structure methods; chemical bonding models; intermolecular interactions.
Prerequisite: CBE 310 or CHEM 474.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 571A Quantum Chemistry: Foundations  Credits: 2 (2-0-0)
Course Description: Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.
Prerequisite: CBE 310 or CHEM 474.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 571B Quantum Chemistry: Electronic Structure  Credit: 1 (1-0-0)
Course Description: Simple systems; symmetry; approximate methods; time dependent methods; molecular structures.
Prerequisite: CHEM 571A, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 573A Chemical Spectroscopy: Interactions of Light and Matter Credit: 1 (1-0-0)
Course Description: Introduction to the fundamentals of spectroscopies used in chemical analysis from the perspective of time dependent quantum mechanics. Time-dependent perturbation theory, absorption and emission of radiation, two-level systems, and electronic, vibrational and rotational transitions.
Prerequisite: CHEM 571A.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573B Chemical Spectroscopy: Electromagnetic Fields in Practice Credit: 1 (1-0-0)
Course Description: Foundation in electromagnetic fields used in chemical spectroscopy. Dispersion and phase, the measurement of electromagnetic fields, properties of short optical pulses, and modulating electromagnetic fields.
Prerequisite: CHEM 431.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573C Chemical Spectroscopy: Condensed Phase Spectroscopy Credits: 2 (2-0-0)
Course Description: Foundations of spectroscopic measurements conducted on condensed phase chemical systems. Use of quantum mechanics and statistical mechanics to describe Response Theory, density matrix formalism, correlation functions, line shapes and spectral fluctuations, response functions, and the use of polarization in spectroscopy.
Prerequisite: CHEM 571A and CHEM 576.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573D Chemical Spectroscopy: Nonlinear Spectroscopy Credit: 1 (1-0-0)
Course Description: Foundations of multidimensional spectroscopic measurements conducted on chemical systems.
Prerequisite: CHEM 573A and CHEM 573C.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573E Chemical Spectroscopy: Spectroscopic Instrumentation Credit: 1 (1-0-0)
Course Description: Instrumentation used to carry out spectroscopic measurements in chemistry research. Lasers and other light sources, optics, and detectors, spectroscopic techniques, and electronic and digital interfacing specific to spectroscopic instrumentation.
Prerequisite: CHEM 431.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 573F Chemical Spectroscopy: Computational Spectroscopy Credit: 1 (1-0-0)
Course Description: Theory and computational techniques to compute and analyze molecular spectra, including aspects of quantum mechanics and statistical mechanics. Emphasis on implementation and computation of molecular spectra.
Prerequisite: CHEM 571A and CHEM 571B and CHEM 575 and CHEM 576.
Registration Information: This is a partial semester course.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 575 Fundamentals of Chemical Thermodynamics Credit: 1 (1-0-0)
Course Description: Fundamental thermodynamic concepts and some applications to chemical problems.
Prerequisite: CBE 310 or CHEM 476 or PH 361.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 576 Statistical Mechanics Credits: 2 (2-0-0)
Course Description: Principles of statistical mechanics with applications to chemical systems.
Prerequisite: CHEM 575, may be taken concurrently.
Registration Information: This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 577 Surface Chemistry Credits: 3 (3-0-0)
Course Description: Capillarity; interfacial thermodynamics, electrical aspects of surface chemistry, absorbed layers.
Prerequisite: CBE 310 or CHEM 476.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578A Computational Chemistry: Electronic Structure Credit: 1 (1-0-0)
Course Description: Electronic structure calculations of energeticand structural properties of molecules and chemical reactions.
Prerequisite: CHEM 571A and CHEM 571B.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 578B Computational Chemistry: Molecular Dynamics Credit: 1 (1-0-0)
Course Description: Molecular Dynamics simulations of liquids to compute static and time dependent properties. Applications include biological and materials chemistry.
Prerequisite: CHEM 576.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 579 Chemical Kinetics Credits: 3 (3-0-0)
Course Description: Elementary reactions, unimolecular reactions, reactions in solution, gas phase ion chemistry, photochemistry, and kinetic modeling.
Prerequisite: CBE 310 or CHEM 476.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
CHEM 601 Responsible Conduct in Chemistry Research Credit: 1 (1-0-0)
Course Description: Appropriate conduct in research, publishing, intellectual property decisions, job hunting, and negotiating; social responsibilities of scientists.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 61 Justice Credit: 2 (2-0-0)
Course Description: Organic reaction mechanisms, including using arrows to show electron movement; heterolytic, radical, and pericyclic reactions.
Prerequisite: CHEM 545.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651A Special Topics in Chemistry: Analytical Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in analytical chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651B Special Topics in Chemistry: Inorganic Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in inorganic chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651C Special Topics in Chemistry: Organic Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in organic chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651D Special Topics in Chemistry: Physical Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in physical chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 651E Special Topics in Chemistry: Materials Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in materials chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651F Special Topics in Chemistry: Chemical Biology Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemical biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651G Special Topics in Chemistry: Chemistry Education Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemistry education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651H Special Topics in Chemistry: Materials Chemistry Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in materials chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651I Special Topics in Chemistry: Chemical Biology Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemical biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 651J Special Topics in Chemistry: Chemistry Education Credits: Var[1-4] (0-0-0)
Course Description: Discussion of current topics in chemistry education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 698 Research Credits: Var[1-9] (0-0-0)
Course Description: Graduate research in chemistry for students who do not plan to write an M.S. thesis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing in chemistry.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 699 Thesis Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 702 Independent Research Proposal Credit: 1 (0-0-1)
Course Description: Preparation, submission, and defense of an independent research proposal; creative and original thinking about research problems in modern chemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. candidacy.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
CHEM 751 Methods of Chemistry Laboratory Instruction Credit: 1 (1-0-0)
Course Description: Basic materials, methods, and skill development related to teaching undergraduate chemistry laboratory courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

CHEM 752 Advanced Chemical Instruction Credit: 1 (0-0-1)
Course Description: Advanced materials, methods, and presentation skills development related to teaching undergraduate chemistry courses.
Prerequisite: CHEM 571.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 773 Atomic and Molecular Spectroscopy Credits: 3 (3-0-0)
Course Description: Time-dependent methods; multiphoton and nonlinear spectroscopy; fundamentals of rotational, vibrational, electronic and magnetic resonance spectroscopy.
Prerequisite: CHEM 571.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CHEM 784 Supervised College Teaching Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 793 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795A Independent Study: Inorganic Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795B Independent Study: Analytical Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795C Independent Study: Biological Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 795D Independent Study: Physical Chemistry Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CHEM 799 Dissertation Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Civil Engineering-CIVE (CIVE)

Courses

CIVE 102 Introduction: Civil/Environmental Engineering Credits: 3 (2-3-0)
Course Description: Civil engineering profession, computer applications and programming related to civil engineering; introduction to surveying.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 103 Engineering Graphics and Computing Credits: 3 (2-2-0)
Course Description: Introduction to the profession and academia; principles of civil engineering design; graphical, oral, and written communication; team projects.
Prerequisite: CIVE 102 or ENGR 101.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 202 Numerical Modeling and Risk Analysis Credits: 3 (2-2-0)
Course Description: Civil engineering systems, simulation and optimization techniques, statistical tools and their use in civil engineering, risk analysis.
Prerequisite: (CIVE 103) and (MATH 160, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 203 Engineering Systems and Decision Analysis Credits: 3 (2-2-0)
Course Description: Civil engineering infrastructure systems, numerical and
decision analysis techniques, applications of risk analysis.
Prerequisite: CIVE 202.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 260 Engineering Mechanics-Statics Credits: 3 (3-0-0)
Course Description: Forces using vector notation; static equilibrium of
rigid bodies; friction, virtual work, centroids, and moments of inertia.
Prerequisite: MATH 160 and PH 141, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 300 Fluid Mechanics Credits: 3 (3-0-0)
Course Description: Fluid properties, statics, kinematics, and dynamics of
fluid motion including viscous and gravitational effects.
Prerequisite: (CIVE 261 and MATH 340, may be taken concurrently) and
(MECH 237, may be taken concurrently or MECH 337, may be taken
concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 301 Fluid Mechanics Laboratory Credit: 1 (0-3-0)
Course Description: Fluid properties; statics, kinematics, and dynamics of
fluid motion including viscous and gravitational effects.
Prerequisite: CIVE 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 302 Evaluation of Civil Engineering Materials Credits: 3 (2-3-0)
Course Description: Behavior and properties of construction materials,
instrumentation, use of statistical tools, material standards, material
selection, quality control.
Prerequisite: CHEM 111 and CIVE 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 303 Infrastructure and Transportation Systems Credits: 3 (3-0-0)
Course Description: Principles of infrastructure systems, transportation
systems, applications of spatial data and GIS, project management and
engineering economy.
Prerequisite: CIVE 260.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 305 Intermediate AutoCAD Credits: 3 (2-2-0)
Course Description: Creating layouts and templates, objects, graphic
patterns and symbols, inserting and managing external references, and
creating isometric drawings.
Prerequisite: CIVE 103.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 322 Basic Hydrology Credits: 3 (3-0-0)
Course Description: Hydrologic cycle, soil moisture, groundwater,
runoff processes, applications in water resources and environmental
engineering.
Prerequisite: (CIVE 300 or CBE 331 or WR 416) and (CIVE 202 or
STAT 301 or STAT 315).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 330 Ecological Engineering Credits: 3 (3-0-0)
Course Description: Principles of ecological engineering and design of
sustainable ecosystems.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 102 or SOCR 240) and
(CHEM 113) and (CIVE 300 or LIFE 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 355 Introduction to Geotechnical Engineering Credits: 3 (3-0-0)
Course Description: Soil behavior, stress-strain and strength properties,
application to earth pressure, slope and foundation problems.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 356 Geotechnical Engineering Laboratory Credit: 1 (0-3-0)
Course Description: Laboratory to demonstrate standard methods of
soils testing, methods of data collection, analysis of results.
Prerequisite: CIVE 355, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 360 Mechanics of Solids Credits: 3 (3-0-0)
Course Description: Stresses and deformations in structural members
and machine elements, combined stresses, stress transformation.
Prerequisite: CIVE 260 or CIVE 262.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 363 Material Properties Credits: 1 (0-3-0)
Course Description: Mechanical properties of metals, woods, and
plastics; testing techniques and standards.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 300 or WR 416.

CIVE 367 Structural Analysis Credits: 3 (3-0-0)
Course Description: Determination of actions in and deformations of determinate and indeterminate structures.
Prerequisite: CIVE 360.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 390 Civil Engineering Student Projects Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 401 Hydraulic Engineering Credits: 3 (3-0-0)
Course Description: Basic principles of fluid mechanics applied to practical problems in hydraulic engineering.
Prerequisite: CIVE 300.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 402 Senior Design Principles Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: (CIVE 300) and (CIVE 303 or CHEM 245).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 403 Senior Project Design Credits: 3 (2-2-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: CIVE 402.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 413 Environmental River Mechanics Credits: 3 (3-0-0)
Course Description: Fluvial geomorphology, river hydraulics, sediment transport, and river response with special emphasis on environmental aspects.
Prerequisite: CIVE 300 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 423 Groundwater Engineering Credits: 3 (3-0-0)
Course Description: Development of groundwater resources; origin, movement, distribution of water below ground surface.
Prerequisite: CIVE 300 or CBE 331 or WR 416.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 424 Modern Gas and Oil Credits: 3 (3-0-0)
Also Offered As: GEOL 424.
Course Description: Introduction to opportunities and challenges of modern gas and oil development, including synergies with other energy sources.
Prerequisite: None.
Registration Information: Junior standing or above; completion of AUCC category 3A. Credit not allowed for both CIVE 424 and GEOL 424.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 425 Soil and Water Engineering Credits: 3 (2-3-0)
Course Description: Control of the soil-water-plant medium for optimum plant growth and environmental protection.
Prerequisite: CBE 331 or CIVE 300 or SOCR 240.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 427 Wastewater Treatment Facility Design Credits: 3 (3-0-0)
Course Description: Design concepts and principles for wastewater treatment systems and unit processes, principles of treatment plant operation.
Prerequisite: (CIVE 300) and (CIVE 438, may be taken concurrently or ENVE 438, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 437 Wastewater Treatment Facility Design Credits: 3 (3-0-0)
Course Description: Design of civil engineering systems, nontechnical and economic design considerations, project organization, design project development and presentation.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CIVE 437 and GEOL 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 438 Environmental Engineering Concepts Credits: 3 (3-0-0)
Course Description: Application of chemical principles to environmental engineering problems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CIVE 439 and CBE 439.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 440 Nonpoint Source Pollution Credits: 3 (3-0-0)
Course Description: Principles, processes, impacts and control of nonpoint source pollution of surface and groundwater.
Prerequisite: CIVE 300 or CIVE 322 or SOCR 240 or WR 416.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 441  Water Quality Analysis and Treatment  Credits: 3 (2-3-0)
Course Description: Physical, chemical and biological methods for the characterization of waters and wastewaters.
Prerequisite: CIVE 438, may be taken concurrently or CIVE 440, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 455  Applications in Geotechnical Engineering  Credits: 3 (3-0-0)
Course Description: Geotechnical engineering applications of earth retaining structures, foundations, dams and embankments, geosynthetics, waste containment systems.
Prerequisite: CIVE 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 466  Design and Behavior of Steel Structures  Credits: 3 (3-0-0)
Course Description: Loads acting on a structure; behavior and design of steel members, connections, and systems.
Prerequisite: CIVE 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 467  Design of Reinforced Concrete Structures  Credits: 3 (3-0-0)
Course Description: Design and behavior of reinforced concrete structural members.
Prerequisite: CIVE 367.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 495  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 502  Fluid Mechanics  Credits: 3 (3-0-0)
Course Description: Fundamental physical concepts of fluid mechanics; ideal and viscous fluid flows; boundary-layer concepts.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 504  Wind Engineering  Credits: 3 (3-0-0)
Course Description: Influence of wind on humanity. Applications to structures, air pollution, wind energy, agricultural aerodynamics, snow movement, human comfort.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 506  Wind Effects on Structures  Credits: 3 (3-0-0)
Course Description: Analysis of wind effects on buildings and structures; deterministic and probabilistic methods; aerodynamic loading and response; codes and standards.
Prerequisite: CIVE 504.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 507  Transportation Engineering  Credits: 3 (3-0-0)
Course Description: Principles of highway engineering, transportation engineering and bridge engineering with a focus on design.
Prerequisite: CIVE 261 and CIVE 303 and CIVE 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 401  Hydraulic System Design  Credits: 3 (3-0-0)
Course Description: Operational management systems, data collection, real-time control, management modeling, rehabilitation and retrofit, maintenance.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 425  Applied Hydraulic System Design  Credits: 3 (3-0-0)
Course Description: Irrigation systems principles and design procedures for operation of sprinkler, trickle, and surface irrigation systems.
Prerequisite: CIVE 322 or CIVE 425.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 440  Hydraulic Structures/Systems  Credits: 3 (3-0-0)
Course Description: Analysis and design of hydraulic structures which make up components of water resource systems.
Prerequisite: CIVE 401.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 441  Water Quality Analysis and Treatment  Credits: 3 (2-3-0)
Course Description: Physical, chemical and biological methods for the characterization of waters and wastewaters.
Prerequisite: CIVE 438, may be taken concurrently or CIVE 440, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 455  Applications in Geotechnical Engineering  Credits: 3 (3-0-0)
Course Description: Geotechnical engineering applications of earth retaining structures, foundations, dams and embankments, geosynthetics, waste containment systems.
Prerequisite: CIVE 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 466  Design and Behavior of Steel Structures  Credits: 3 (3-0-0)
Course Description: Loads acting on a structure; behavior and design of steel members, connections, and systems.
Prerequisite: CIVE 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 467  Design of Reinforced Concrete Structures  Credits: 3 (3-0-0)
Course Description: Design and behavior of reinforced concrete structural members.
Prerequisite: CIVE 367.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 495  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 502  Fluid Mechanics  Credits: 3 (3-0-0)
Course Description: Fundamental physical concepts of fluid mechanics; ideal and viscous fluid flows; boundary-layer concepts.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 504  Wind Engineering  Credits: 3 (3-0-0)
Course Description: Influence of wind on humanity. Applications to structures, air pollution, wind energy, agricultural aerodynamics, snow movement, human comfort.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 519 Irrigation Water Management  Credits: 3 (3-0-0)
Course Description: Apply soil, plant, water, and atmospheric engineering principles to determine crop water need to sustain agricultural production and the environment.
Prerequisite: CIVE 425.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 520 Physical Hydrology  Credits: 3 (3-0-0)
Course Description: Hydrologic, atmospheric processes in the water cycle; linear systems, hydrologic response; geomorphologic description of hydrologic processes, response.
Prerequisite: CIVE 322 or CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 521 Hydrometry  Credits: 3 (2-3-0)
Course Description: Principles, methods, instruments, and equipment for measuring water quantity and water quality variables in nature.
Prerequisite: CIVE 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 522 Engineering Hydrology  Credits: 3 (3-0-0)
Course Description: Hydrologic design under uncertainty; conventional and remote sensing; design flows and storms; river routing; reservoir design; watershed models.
Prerequisite: CIVE 520.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 524 Modeling Watershed Hydrology  Credits: 3 (2-2-0)
Also Offered As: WR 524.
Course Description: Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite: (CIVE 322 or WR 416) and (STAT 315 or STAT 301 or CIVE 202).
Registration Information: Must register for lecture and recitation. Credit not allowed for both CIVE 524 and WR 524.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 525 Water Engineering: International Development Credits: 3 (3-0-0)
Course Description: Planning and design of small-scale and low-cost water supply and wastewater systems for rural communities in developing countries
Prerequisite: CIVE 401 or CIVE 438 or ENVE 438.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

CIVE 531 Groundwater Hydrology  Credits: 3 (3-0-0)
Course Description: Groundwater occurrence, distribution, movement, exploration and recharge, well hydraulics and design, interaction of ground and surface water.
Prerequisite: CIVE 300 or CBE 331 or MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 532 Wells and Pumps  Credits: 3 (3-0-0)
Course Description: Well field hydraulics, well drilling methods, well design, aquifer test methods, pumping systems, well maintenance, storage/distribution systems.
Prerequisite: (CIVE 423 and CHEM 111) and (CIVE 531 or GEOL 452).
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 533 Biomolecular Tools for Engineers  Credits: 3 (2-3-0)
Also Offered As: BIOM 533.
Course Description: Theoretical and practical aspects of biomolecular laboratory tools--PCR, cloning, sequencing, single-molecule optical techniques and live-cell imaging.
Prerequisite: BMS 300 or MIP 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for CIVE 533, BIOM 533 and ECE 533.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 534 Applied and Environmental Molecular Biology  Credits: 3 (2-2-0)
Course Description: Environmental microbiology and molecular biology tools used to investigate both natural systems and engineered processes.
Prerequisite: CIVE 540.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 537 Residuals Management  Credits: 3 (3-0-0)
Course Description: Planning and design for processing and disposal of residuals including solid wastes, sludges, and hazardous wastes.
Prerequisite: CIVE 300.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 538 Aqueous Chemistry  Credits: 3 (3-0-0)
Course Description: Principles of solution chemistry applied to aquatic systems.
Prerequisite: CHEM 113 and MATH 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 539 Water and Wastewater Analysis Credits: 3 (2-3-0)
Course Description: Chemical and biological methods of assessing water quality; significance of chemicals in aquatic systems.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 540 Advanced Biological Wastewater Processing Credits: 3 (3-0-0)
Also Offered As: CBE 540.
Course Description: Fundamentals of environmental biotechnology: environmental microbiology, microbial kinetics, basic reactor design, wastewater treatment.
Prerequisite: CBE 320 or CIVE 438.
Registration Information: Credit not allowed for both CIVE 540 and CBE 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 541 Environmental Unit Operations-Treatment-Design Credits: 4 (3-3-0)
Course Description: Reactor theory, filtration, adsorption, ion exchange, gas transfer, oxidation, membranes, biological reactors, disinfection.
Prerequisite: CIVE 439 or CBE 439.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 542 Water Quality Modeling Credits: 3 (3-0-0)
Course Description: Chemical, physical, and biological processes defining surface water quality, construction and application of computer models for lakes and streams. Must have taken two semesters of chemistry; one course in hydrology or water quality.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 543 Instrumental Environmental Analysis Credits: 3 (2-3-0)
Course Description: Environmental sampling and preservation techniques followed by the instrumental analysis of the samples.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 544 Water Resources Planning and Management Credits: 3 (3-0-0)
Course Description: Management and planning of natural and constructed water systems. Integrated management and case studies of water use and environmental resources.
Prerequisite: CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 546 Water Resource Systems Analysis Credits: 3 (2-2-0)
Course Description: Applications of systems analysis and optimization techniques in water resources planning and management.
Prerequisite: CHEM 113 and MATH 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 547 Statistics for Environmental Monitoring Credits: 3 (3-0-0)
Also Offered As: STAT 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both CIVE 547 and STAT 547. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 549 Drainage and Wetland Engineering Credits: 3 (3-0-0)
Course Description: Drainage and wetlands design for agricultural and natural resource applications. Water table modification for nonpoint sources pollution control.
Prerequisite: CIVE 425 or CIVE 322.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 550 Foundation Engineering Credits: 3 (3-0-0)
Course Description: Mechanics and methodology of foundation engineering; selection and design of foundation systems on soft, firm, and expansive soils; special problems.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 553 Slope Stability and Retaining Structures Credits: 3 (3-0-0)
Course Description: Slope stability theory and application, retaining walls, sheet-pile walls, braced excavations, geosynthetic uses.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 555 Seepage and Earth Dams Credits: 3 (3-0-0)
Course Description: Hydraulic conductivity measurements; seepage analysis and control; earth dam and embankment design; computer applications.
Prerequisite: CIVE 355.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 558  Containment Systems for Waste Disposal  Credits: 3 (3-0-0)
Course Description: Basic principles governing the design of containment systems used in waste disposal applications.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 559  Special Topics in Geotechnical Engineering  Credits: 3 (3-0-0)
Course Description: Advanced topics in geotechnical engineering including expansive soils, unsaturated soil mechanics, soil-structure interaction and mining geotechnics.
Prerequisite: CIVE 355.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 560  Advanced Mechanics of Materials  Credits: 3 (3-0-0)
Course Description: Analysis of stress and strain failure theory; selected topics in solid mechanics, plate analysis; introduction to elastic stability.
Prerequisite: CIVE 360.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 561  Advanced Steel Behavior and Design  Credits: 3 (3-0-0)
Course Description: Behavior of steel components and systems. Design of composite members, plate girders, and bolted and welded connections.
Prerequisite: CIVE 466.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 562  Fundamentals of Vibrations  Credits: 3 (3-0-0)
Course Description: Free and forced vibrations of single, two, and multiple degree of freedom systems. Closed-form and numerical solutions.
Prerequisite: CIVE 261 and CIVE 360.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 563  Structural Reliability: Theory, Application  Credits: 3 (3-0-0)
Course Description: Theory of structural reliability as it relates to analysis, design, construction, and maintenance of structural and mechanical systems.
Prerequisite: CIVE 203 or STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 565  Finite Element Method  Credits: 3 (3-0-0)
Course Description: Theory and application in elasticity, porous flow, heat conduction, and other engineering problems.
Prerequisite: MATH 340.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 566  Intermediate Structural Analysis  Credits: 3 (3-0-0)
Course Description: Work and energy concepts, curved members and arches, matrix analysis of linear systems, numerical techniques.
Prerequisite: CIVE 367.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 567  Advanced Concrete Design  Credits: 3 (3-0-0)
Course Description: Behavior of reinforced and prestressed concrete members; development of design methods; behavior and design of slabs, shearwalls, and buildings.
Prerequisite: CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 568  Design of Masonry and Wood Structures  Credits: 3 (3-0-0)
Course Description: Behavior and design of structures and structural components constructed of masonry or engineered wood.
Prerequisite: CIVE 466 or CIVE 467.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 571  Pipeline Engineering and Hydraulics  Credits: 3 (3-0-0)
Course Description: Water supply, wastewater, stormwater, oil and gas, and industrial applications. Emphasis on pressurized water pipelines.
Prerequisite: CIVE 300.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 572  Analysis of Urban Water Systems  Credits: 3 (2-2-0)
Course Description: Behavior and interaction of urban water distribution and collection systems; how system state and driving variables affect system performance.
Prerequisite: CIVE 300 and CIVE 401.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 573  Urban Stormwater Management  Credits: 3 (3-0-0)
Course Description: Effects of urbanization on watershed hydrology and receiving waters; control practices to mitigate effects using mathematical models.
Prerequisite: (CIVE 322) and (CIVE 401).
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
CIVE 574 Civil Engineering Project Management  Credits: 3 (3-0-0)  
**Course Description:** Principles of civil engineering project management including proposals, contracts, scheduling, quality assurance, budgeting, and risk management.  
**Prerequisite:** None.  
**Registration Information:** Sections may be offered: Online.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

CIVE 575 Sustainable Water and Waste Management  Credits: 3 (3-0-0)  
**Course Description:** The science, engineering, and policy behind sustainable water and waste practices. Sustainable urban water and wastewater management.  
**Prerequisite:** CIVE 322 or ENVE 322.  
**Registration Information:** Sections may be offered: Online.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

CIVE 576 Engineering Applications of GIS and GPS  Credits: 3 (2-2-0)  
**Course Description:** Integration of GPS and GIS in the planning and decision making process, application to case study.  
**Prerequisite:** None.  
**Registration Information:** Must register for lecture and laboratory. Sections may be offered: Online.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

CIVE 577 GIS in Civil and Environmental Engineering  Credits: 3 (2-2-0)  
**Course Description:** GIS technology for spatial design/analysis; applications in facilities management, urban infrastructure, water resources, environmental engineering.  
**Prerequisite:** (CIVE 300) and (CIVE 322).  
**Registration Information:** Must register for lecture and laboratory. Sections may be offered: Online.  
**Term Offered:** Spring.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  

CIVE 578 Infrastructure and Utility Management  Credits: 3 (3-0-0)  
**Course Description:** Infrastructure and utility planning, management, and security. Systems approach to life cycle management. Problems, analysis, decision support systems.  
**Prerequisite:** None.  
**Registration Information:** Ten credits of engineering, economics, public administration, or planning courses. Sections may be offered: Online.  
**Term Offered:** Spring.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  

CIVE 579 Risk and Security of the Built Environment  Credits: 3 (3-0-0)  
**Course Description:** Infrastructure security and safety to prepare the built environment against natural and human-caused threats.  
**Prerequisite:** None.  
**Registration Information:** Sections may be offered: Online.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

CIVE 584 Supervised College Teaching  Credits: Var[1-18] (0-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

CIVE 592A Seminar: Fluid Mechanics and Wind Engineering  Credit: 1 (0-0-1)  
**Course Description:**  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

CIVE 592B Seminar: Geotechnical Engineering  Credit: 1 (0-0-1)  
**Course Description:**  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

CIVE 592C Seminar: Environmental Engineering  Credit: 1 (0-0-1)  
**Course Description:**  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

CIVE 592D Seminar: Space Engineering  Credit: 1 (0-0-1)  
**Course Description:**  
**Prerequisite:** None.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

CIVE 595A Independent Study: Fluid Mechanics/Wind Engineering  Credits: Var[1-18] (0-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Registration Information:** Sections may be offered: Online.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

CIVE 595B Independent Study: Hydraulics  Credits: Var[1-18] (0-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Registration Information:** Sections may be offered: Online.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

CIVE 595C Independent Study: Hydrology and Water Resources  Credits: Var[1-18] (0-0-0)  
**Course Description:**  
**Prerequisite:** None.  
**Registration Information:** Sections may be offered: Online.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.
CIVE 595D  Independent Study: Mechanics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595E  Independent Study: Geotechnical Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595F  Independent Study: Structures  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595G  Independent Study: Environmental Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595H  Independent Study: Water Resources Planning and Management  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595I  Independent Study: Groundwater  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 595J  Independent Study: Bioresource and Agricultural Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596A  Group Study: Fluid Mechanics/Wind Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596B  Group Study: Hydraulics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596C  Group Study: Hydrology and Water Resources  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596D  Group Study: Mechanics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596E  Group Study: Geotechnical Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596F  Group Study: Structures  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596G  Group Study: Environmental Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596H  Group Study: Water Resource Planning and Management  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 596I Group Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 596J Group Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 604 Fluid Turbulence and Modeling Credits: 3 (3-0-0)
Course Description: Engineering concepts for transport of pollutants, toxic and flammable species, sand, and snow. Fluid modeling, numerical and analytical approaches.
Prerequisite: CIVE 502 or CIVE 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 607 Computational Fluid Dynamics Credits: 3 (3-0-0)
Course Description: Numerical methods used in computational solutions of hydraulics, environmental and wind engineering problems.
Prerequisite: CIVE 300.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 610 Special Topics in Hydraulics Credits: 3 (3-0-0)
Course Description: Advanced topics in hydraulics, hydromechanics, environmental hydraulics, and computational hydraulics.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 612 Open Channel Flow Credits: 4 (4-0-0)
Course Description: Steady, uniform, and non-uniform flow; backwater curves; flow through bridge piers, transitions, and culverts; spatially varied and unsteady flow.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 613 River Restoration Design Credits: 3 (3-0-0)
Course Description: Analysis and design for assisting the recovery of hydrologic, geomorphic, and ecological processes and ecosystem services in degraded river systems.
Prerequisite: CIVE 401.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 622 Risk Analysis of Water/Environmental Systems Credits: 3 (3-0-0)
Course Description: Risk and uncertainty analysis applied to hydrology, hydraulics, groundwater, water resources, and environmental engineering systems.
Prerequisite: (CIVE 322) and (STAT 315).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 624 Control of Floods and Droughts Credits: 3 (3-0-0)
Course Description: Flood and drought characteristics, impacts; structural, nonstructural flood control measures; drought prediction, drought control, drought response.
Prerequisite: CIVE 522.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 631 Computational Methods in Subsurface Systems Credits: 3 (3-0-0)
Course Description: Numerical flow models; finite difference and finite element methods; parameter identification, stochastic modeling and advanced analytical solutions.
Prerequisite: (MATH 340) and (CIVE 531).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 638 Groundwater Quality and Contaminant Transport Credits: 3 (3-0-0)
Course Description: Analysis of hydrochemical data. Advection with and without mixing. Retardation of reactive solutes. Design of groundwater quality investigations.
Prerequisite: CIVE 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CIVE 645 Computer-Aided Water Management and Control  Credits: 3 (2-2-0)
Course Description: Real-time management and control of water resource systems; applications of computer control concepts to improve system performance.
Prerequisite: CIVE 546 or CIVE 577.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 654 Experimental Soil Mechanics  Credits: 3 (2-3-0)
Course Description: Experimental design; data acquisition; soil fabric; isotropic/K0 condensation; swelling; stiffness; shear wave velocity; triaxial; hollow cylinder; partial saturation.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 655 Advanced Soil Mechanics  Credits: 3 (3-0-0)
Course Description: Advanced topics in shear strength and consolidation of soils; stress paths; anisotropy; submergence; partial and radial drainage; numerical methods.
Prerequisite: CIVE 355.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 658 Remediation Systems - Subsurface Contamination  Credits: 3 (3-0-0)
Course Description: Applications in geoenvironmental engineering practice involving design of in situ containment and remediation systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 662 Foundations of Solid Mechanics  Credits: 3 (3-0-0)
Course Description: Analysis of stress and strain in solids emphasizing linear elasticity and plasticity; introduction to creep, viscoelasticity, and finite deformations.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 664 Mechanics of Fatigue and Fracture  Credits: 3 (3-0-0)
Course Description: Fracture mechanics including linear elastic, elastic-plastic, and dynamic fracture; on ductile and cleavage fracture in metals.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 667 Advanced Structural Analysis  Credits: 3 (3-0-0)
Course Description: Analysis program development, application of finite element analysis, computer-assisted analysis, introduction to nonlinear analysis.
Prerequisite: CIVE 566.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 684 Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695A Independent Study: Fluid Mechanics and Wind Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695B Independent Study: Hydraulics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695C Independent Study: Hydrology and Water Resources  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695D Independent Study: Mechanics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 695E Independent Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695F Independent Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695G Independent Study: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695H Independent Study: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695I Independent Study: Groundwater Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695J Independent Study: Bioresource and Agricultural Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 695K Independent Study: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696A Group Study: Fluid Mechanics and Wind Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696B Group Study: Hydraulics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696C Group Study: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696D Group Study: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696E Group Study: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696F Group Study: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 696G  Group Study: Environmental Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696H  Group Study: Water Resource Planning and Management  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 696I  Group Study: Groundwater  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699B  Thesis: Hydraulics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699C  Thesis: Hydrology and Water Resources  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699E  Thesis: Geotechnical Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699F  Thesis: Structures  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699G  Thesis: Environmental Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699H  Thesis: Water Resource Planning and Management  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699I  Thesis: Groundwater  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699J  Thesis: Bioresource and Agricultural Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 699K  Thesis: Water and International Development  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 703 Special Topics in Fluid Mechanics  Credits: 3 (3-0-0)
Course Description: Advanced topics in fluid mechanics; associated experimental and numerical techniques.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 716 Erosion and Sedimentation  Credits: 3 (3-0-0)
Course Description: Sediment properties; resistance to flow; incipient motion and bedforms; sediment transport, reservoir sedimentation.
Prerequisite: CIVE 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 721 Stochastic Water and Environmental Systems  Credits: 3 (3-0-0)
Course Description: Stochastic analysis of water and environmental systems. Simulation, forecasting, spatial analysis, modeling changes, stochastic differential equations.
Prerequisite: CIVE 622.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 722 Large Scale Hydrology  Credits: 3 (3-0-0)
Course Description: Global and regional scale hydrologic processes; land/atmosphere interaction; scaling in hydrology; geomorphoclimatic structure of hydrologic response.
Prerequisite: CIVE 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 724 River Basin Morphology  Credits: 3 (3-0-0)
Course Description: Analysis of river basin properties including their connections to statistical theories and erosion processes and their hydrologic implications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 725 Theory of Plates and Shells.  Credits: 3 (3-0-0)
Course Description: Classical plate, shell and membrane theory for isotropic and layered anisotropic media. Analytic and computational solution techniques.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 734 River Mechanics  Credits: 3 (3-0-0)
Course Description: Analysis of river basin properties including their connections to statistical theories and erosion processes and their hydrologic implications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 742 Advanced Topics in Environmental Engineering  Credits: 3 (2-3-0)
Course Description: Selected topics from current environmental engineering research including molecular methods, water/wastewater treatment, hazardous water remediation.
Prerequisite: CIVE 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 747D Advanced Topics in Environmental Engineering  Credits: 3 (2-3-0)
Course Description: Selected topics from current environmental engineering research including molecular methods, water/wastewater treatment, hazardous water remediation.
Prerequisite: CIVE 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CIVE 751 Soil Dynamics  Credits: 3 (3-0-0)
Course Description: Soil behavior under dynamic loading; stress wave propagation; foundation response to vibratory and transient loading; elements of earthquake effects.
Prerequisite: CIVE 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 766 Theory of Plates and Shells.  Credits: 3 (3-0-0)
Course Description: Classical plate, shell and membrane theory for isotropic and layered anisotropic media. Analytic and computational solution techniques.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 767 Structural Dynamics and Earthquake Engineering  Credits: 3 (3-0-0)
Course Description: Analysis, behavior, and design of structural systems subjected to dynamic loads, including earthquakes, wind, and ocean waves.
Prerequisite: CIVE 562 and CIVE 667.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIVE 799A Dissertation: Fluid Mechanics and Wind Engineering  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799B Dissertation: Hydraulics  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CIVE 799C Dissertation: Hydrology and Water Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799D Dissertation: Mechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799E Dissertation: Geotechnical Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799F Dissertation: Structures Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799G Dissertation: Water Resource Planning and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799H Dissertation: Water and International Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIVE 799I Dissertation: Construction Engineering and Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Clinical Sciences-VS (VS)

Courses
VS 313 Prevention and Control of Livestock Diseases Credits: 3 (3-0-0)
Also Offered As: ANEQ 313.
Course Description: Common ailments of livestock; sanitation and disease prevention and control.
Prerequisite: (ANEQ 230 or BMS 300 or ANEQ 305) and (ANEQ 310, may be taken concurrently and ANEQ 320, may be taken concurrently).
Registration Information: Junior or senior standing. Credit not allowed for both VS 313 and ANEQ 313.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 331 Histology Credits: 4 (3-2-0)
Course Description: Analysis of animal cells, tissues, and organs emphasizing light microscopy.
Prerequisite: BMS 300.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 331 and BMS 330. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 333 Domestic Animal Anatomy Credits: 4 (3-3-0)
Course Description: Comparative functional anatomy of the dog, horse, and cow.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both VS 333 and BMS 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
VS 479 Biology and Behavior of Dogs Credits: 3 (3-0-0)
Also Offered As: BZ 479.
Course Description: Interactions of physiology, neurobiology, and genetics on behavior of domestic dogs, and how evolution and domestication influence behavioral traits.
Prerequisite: LIFE 103 or BZ 110.
Registration Information: Credit not allowed for both VS 479 and BZ 479.
Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 533 Epidemiology of Infectious Diseases/Zoonoses Credits: 3 (2-0-1)
Also Offered As: MIP 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation. Credit not allowed for both VS 533 and MIP 533.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 562 Applied Data Analysis Credits: 3 (3-0-0)
Course Description: Data management, application and interpretation of statistical analysis, and reporting of results for students in health science fields.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 570 Issues in Animal Agriculture Credits: 2 (2-0-0)
Also Offered As: AGRI 570.
Course Description: Issues that have a major impact on the direction of changes in animal agriculture.
Prerequisite: None.
Registration Information: Credit not allowed for both VS 570 and AGRI 570.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 579 Animal Behavior in Captive Populations Credits: 3 (3-0-0)
Also Offered As: NSCI 579.
Course Description: How animals learn, perceive their world and behave, and how all of those intersect to alter behavior in captive settings.
Prerequisite: BZ 300.
Registration Information: Enrollment in the M.P.N.S., Zoo, Aquarium, and Shelter Management specialization can substitute for BZ 300. Credit not allowed for both VS 579 and NSCI 579.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 602 Critical Evaluation of Scientific Literature Credits: 2 (1-0-1)
Course Description: Method of evaluating scientific literature. Students present critiques of papers they have chosen.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

VS 605 Comparative Anesthesiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in VS 605.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 612 Plastic and Reconstructive Surgery Credits: 2 (2-0-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for VS 605, EDRM 606 and PBHL 560.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 613 Plastic and Reconstructive Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Advances in surgical patient care, surgical instrumentation, and reconstruction.
Prerequisite: VM 786B.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 606 Comparative Anesthesiology Laboratory Credit: 1 (0-3-0)
Course Description: Techniques in anesthesia for large and small animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for VS 605.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 626 Infertility and Genital Disease Credits: 2 (2-0-0)
Course Description: Infectious and noninfectious causes of reproductive failure in food animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.
VS 628  Physiology and Pathophysiology  Credits: 3 (3-0-0)
Course Description: Overview of the normal physiology and pathophysiology of disease states of mammalian organ systems.
Prerequisite: BMS 500 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree can substitute for BMS 500; BMS 501.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VS 630  Orthopedic Surgery  Credits: 3 (3-0-0)
Course Description: Techniques, devices, and prosthetic materials in rehabilitating musculoskeletal problems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 642  Ophthalmology  Credit: 1 (0-3-0)
Course Description: Instrumentation, ocular therapeutics, and clinical ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 644  Principles of Theriogenology  Credits: 2 (2-0-0)
Course Description: Provide basic and practical understanding of reproduction in domestic species. Including the anatomy and physiology of males and females, gamete development, fertilization, embryonic development, parturition and early neonatal care; focusing on domestic animals. In addition to basic normal physiology, characteristic disease states and potential treatments will be discussed, as well as methods for improving reproductive capabilities, such as artificial insemination and embryo transfer.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 645  Surgery of the Eye  Credits: 3 (2-3-0)
Course Description: Techniques, indications, and complications.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 648  Food Animal Production and Food Safety  Credits: 2 (2-0-0)
Also Offered As: VM 648.
Course Description: Basic orientation to food animal production units, herd health concepts, and issues of food safety from preharvest through processing and distribution.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in Food Science/Safety Graduate Interdisciplinary Studies program required. Credit not allowed for both VS 648 and VM 648.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 650  Comparative Abdominal Surgery  Credits: 3 (3-0-0)
Course Description: New techniques in surgery of abdominal viscera.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 651  Comparative Abdominal Surgery Laboratory  Credit: 1 (0-3-0)
Course Description: Reparative and reconstructive abdominal surgical procedures.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 655  Echocardiography in Veterinary Medicine  Credits: 3 (2-3-0)
Course Description: Technical proficiency in obtaining echocardiographic images; fundamental understanding of diagnostic criteria for common cardiac disease in dogs and cats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required. Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 660  Neurology and Neurosurgery  Credits: 3 (3-0-0)
Course Description: Diagnostic and surgical techniques for the nervous system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 661  Neurology and Neurosurgery Laboratory  Credit: 1 (0-3-0)
Course Description: Production and correction of surgically amenable lesions in central and peripheral nervous system; electrodiagnosis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.
VS 673 Thoracic and Cardiovascular Surgery Credits: 3 (3-0-0)
Course Description: Surgical approaches to the thorax and the central and peripheral cardiovascular system.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: DVM degree or equivalent professional medicine degree required.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 674 Thoracic and Cardiovascular Surgery Laboratory Credit: 1 (0-3-0)
Course Description: Surgical procedures applied to the chest, heart, and vessels.
Prerequisite: (VM 786A or VM 786B) and (VS 673, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: Research projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 701 Postgraduate Medicine I Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of immunology, emergency medicine, dermatology, and endocrinology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 702 Postgraduate Medicine II Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of neurology, gastroenterology, and ophthalmology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 703 Postgraduate Medicine III Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of oncology, cardiology, reproduction, ophthalmology, and radiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 704 Postgraduate Medicine IV Credits: Var[1-3] (0-0-0)
Course Description: Comprehensive review, update of hematology, nephrology, urology, respiratory, hepatic, and pancreatic.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

VS 716 Advanced Studies in Reproduction Credits: 2 (2-0-0)
Course Description: Biochemical and physiological basis for problems in reproduction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VS 717 Cancer Biology Clinical Practicum Credits: 2 (0-0-4)
Course Description: Exposes graduate students engaged in laboratory cancer research to cancer from a clinical perspective, through VTH clinical rotations.
Prerequisite: ERHS 510.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VS 733 Advanced Veterinary Epidemiology Credits: 4 (4-0-0)
Course Description: Advanced epidemiological and statistical techniques for the design and analysis of research projects.
Prerequisite: (ERHS 532) and (ERHS 542 or ERHS 544 or STAT 511 or STAT 512 or VS 662).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 750 Clinical and Applied Pharmacology Credits: 2 (2-0-0)
Course Description: Factors involved in drug dosing and variability of drug response. Applications in veterinary and human medicine.
Prerequisite: BMS 450.
Registration Information: DVM degree or equivalent professional medicine degree can substitute for BMS 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 760 Methods in Orthopaedic Research Credits: 3 (2-0-1)
Course Description: Methods utilized in orthopaedic research will be presented by reviewing basic principles followed by examples of use in research projects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

VS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 792 Seminar Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
VS 795A Independent Study: Small Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795B Independent Study: Large Animal Medicine Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795C Independent Study: Small Animal Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795D Independent Study: Equine Surgery Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795G Independent Study: Equine Orthopedics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795H Independent Study: Large Animal Reproduction Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795I Independent Study: Anesthesiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795J Independent Study: Cardiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795K Independent Study: Neurology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795L Independent Study: Dermatology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795M Independent Study: Ophthalmology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795O Independent Study: Herd Health Management Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795P Independent Study: Equine Lameness Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
VS 795S  Independent Study: Epidemiology  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 795T  Independent Study: Human-Animal Bond  Credits:
Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Maximum of 5 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

VS 796  Group Study-Medicine  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 798  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

VS 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Communication Studies-SPCM

SPCM 130  Relational and Organizational Communication (GT-SS3)  Credits: 3 (2-0-1)
Course Description: Basic communication processes and skills central to relating and organizing in interpersonal, small group, and organizational contexts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SPCM 200  Public Speaking  Credits: 3 (3-0-0)
Course Description: Fundamentals of public speaking emphasizing content, organization, delivery, audience response.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 201  Rhetoric in Western Thought (GT-AH3)  Credits: 3 (3-0-0)
Course Description: Major concepts of Western rhetoric from Greece to modern times and their relationship to present-day approaches to communication.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

SPCM 207  Public Argumentation  Credits: 3 (3-0-0)
Course Description: Key communication principles for democracy, including issue analysis, evidence, reasoning, decision-making, debate, dialogue, and deliberation.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 232  Group Communication  Credits: 3 (3-0-0)
Course Description: Principles and methods of group communication emphasizing face-to-face and electronically mediated problem solving and decision making.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 278A  Communication Skills: Convention/Meeting Planning  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).
SPCM 278B Communication Skills: Interviewing  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278C Communication Skills: Film Festivals  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278D Communication Skills: Friendship  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278E Communication Skills: Intercultural Competence  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278F Communication Skills: Virtual Teamwork  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278G Communication Skills: Parliamentary Procedure  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278H Communication Skills: Organizational Training  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 278I Communication Skills: Social Media  Credit: 1 (1-0-0)
Course Description: Applied communication skills in specific contexts.
Prerequisite: None.
Registration Information: A maximum of 3 credits are allowed for SPCM 278A-I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 300 Advanced Public Speaking  Credits: 3 (0-0-3)
Course Description: Advanced techniques in public speaking; emphasis on argument construction and refutation, style, and manuscript delivery.
Prerequisite: SPCM 200.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 311 Historical Speeches on American Issues  Credits: 3 (3-0-0)
Course Description: Significant speeches and speakers as they reflected and affected American issues from colonial period through early 20th century.
Prerequisite: CO 150.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 320 Communication--Human Anti-Trafficking  Credits: 3 (3-0-0)
Course Description: Examines historical and contemporary anti human trafficking movements, assessing the communication strategies employed by anti-trafficking advocates and organizations. Assesses the role language plays in shaping societal attitudes toward victims, survivors, and perpetrators of human trafficking.
Prerequisite: SPCM 100 to 499 - at least 3 credits.
Term Offered: Fall.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 330 Nonverbal Communication  Credits: 3 (3-0-0)
Course Description: Non-language communication; systems and functions of nonverbal communication behaviors.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 332 Interpersonal Communication Skills  Credits: 3 (3-0-0)
Course Description: Analysis, exploration, and skill enhancement strategies for interpersonal communication in friendship, couple, family, and business relationships.
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 333 Professional Communication  Credits: 3 (3-0-0)
Course Description: Technological, interpersonal, and ethical dimensions of professional communication, emphasizing interviews, teams, and presentations at work.
Prerequisite: SPCM 200.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
SPCM 334  Co-Cultural Communication  Credits: 3 (3-0-0)
Course Description: Cultural concerns of communication among co-cultures of United States; diversity; self-awareness as cultural imperative for enhanced communication.
Prerequisite: None.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 335  Gender and Communication  Credits: 3 (3-0-0)
Course Description: Analysis and exploration of communication as it relates to gender and women's and men's roles and identities.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 341  Evaluating Contemporary Television  Credits: 3 (3-0-0)
Course Description: Rhetorical standards applied to content, ethical, and artistic aspects of American televised discourse; emphasizing nonentertainment programming.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 342  Critical Media Studies  Credits: 3 (3-0-0)
Course Description: Analysis of communication media; history, structure, regulation, policy, and impact upon society.
Prerequisite: SPCM 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 346  Virtual Culture and Communication  Credits: 3 (2-2-0)
Course Description: Rhetorical theory applied to planning, producing, and evaluating computer-mediated messages.
Prerequisite: SPCM 100 or SPCM 342.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SPCM 346 and SPCM 378.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 347  Visual Communication  Credits: 3 (3-0-0)
Course Description: Media/visual aesthetics and literacy and the symbolic and affective dimensions of the codes, conventions, and formulas of media.
Prerequisite: SPCM 100 or SPCM 342.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 349  Freedom of Speech  Credits: 3 (3-0-0)
Course Description: Historical and philosophical precedents to freedom of speech; development of free speech principles in the U.S.; ethical obligations of speakers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 350  Evaluating Contemporary Film  Credits: 3 (2-3-0)
Course Description: Theory and development of film criticism; application of critical approaches to modern fiction and nonfiction film.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 354  History and Appreciation of Film  Credits: 3 (2-3-0)
Course Description: Screening and evaluation of landmark fiction and nonfiction films; assessment of cinema as an art form and a social force.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 355  Asians in the U.S. Media  Credits: 3 (2-3-0)
Course Description: Asian representations in the U.S. media from the 19th century to the present.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 356  Film and Social Change  Credits: 3 (2-3-0)
Course Description: Ways in which the medium of motion pictures has sparked significant social changes at home and abroad.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 357  Film and Genre in Film  Credits: 3 (2-3-0)
Course Description: Gender relations in film genres.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 358  History and Genre in Film  Credits: 3 (2-3-0)
Course Description: Interpersonal/organizational dimensions and communicative processes underpinning virtual/remote/distributed workers and workplaces.
Prerequisite: None.
Registration Information: Credit not allowed for both SPCM 378 and SPCM 346. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Term Offered</th>
<th>Special Course Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPCM 382A</td>
<td>Study Abroad: Bridging Cultures--USA-Italy</td>
<td>3</td>
<td>Traditional</td>
<td>No.</td>
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<td>Course Description: Theory, concepts, principles, research methods, and practical skills in the areas of intercultural and cross-cultural communication, construction and negotiation of Italian identity (italianità), and strategies of an effective dialogue with a global mindset. The aim of the course is to transform its participants into culturally aware and skilled global citizens, with the empirical experience of cultural bridging.</td>
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<td>Prerequisite: SPCM 200.</td>
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<td>Term Offered: Summer.</td>
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<td>Grade Mode: Traditional.</td>
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<tr>
<td>SPCM 384</td>
<td>Supervised College Teaching</td>
<td>Var[1-3]</td>
<td>0-0-0</td>
<td>No.</td>
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<td>Course Description: Open only to undergraduate students who are invited to assist in teaching selected courses. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.</td>
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<td>Terms Offered: Fall, Spring, Summer.</td>
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<td>Grade Mode: Instructor Option.</td>
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<td>SPCM 387</td>
<td>Communication Internship</td>
<td>1</td>
<td>0-0-1</td>
<td>No.</td>
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<td>Course Description: (SPCM 100 or SPCM 342) and (SPCM 200 and SPCM 201 and SPCM 207).</td>
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<td>Registration Information: 2.0 GPA.</td>
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<td>Terms Offered: Fall, Spring, Summer.</td>
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<td>Grade Mode: Instructor Option.</td>
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<tr>
<td>SPCM 401</td>
<td>Rhetoric in Social Movements</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td></td>
<td>Course Description: Case studies of campaigns and social movements; genesis, leadership, and use of traditional and electronically mediated rhetoric to achieve objectives.</td>
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<td></td>
<td>Prerequisite: None.</td>
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<td>Term Offered: Fall.</td>
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<td>Grade Modes: S/U within Student Option, Trad within Student Option.</td>
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<td>SPCM 407</td>
<td>Public Deliberation</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td>Course Description: Communication in collaborative decision-making and community problem-solving, examined through the lens of deliberative democracy.</td>
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<td>Prerequisite: SPCM 200 and SPCM 207.</td>
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<td>Terms Offered: Fall, Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>SPCM 408</td>
<td>Applied Deliberative Techniques</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td>Course Description: Skills development and direct experience in convening, facilitating, and reporting public forums tied to Center for Public Deliberation activities.</td>
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<td>Prerequisite: None.</td>
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<td>Registration Information: Written consent of instructor.</td>
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<td>Terms Offered: Fall, Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<tr>
<td>SPCM 411</td>
<td>Contemporary Speeches on American Issues</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td>Course Description: Significant speeches and speakers as they reflect and affect issues, 1930 to present.</td>
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<td>Prerequisite: CO 150.</td>
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<td>SPCM 412</td>
<td>Evaluating Contemporary Rhetoric</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td>Course Description: Exploration and evaluation of contemporary persuasive communication in order to understand and assess a variety of forms of messages and symbols.</td>
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<td></td>
<td>Prerequisite: CO 150.</td>
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<td>SPCM 415</td>
<td>Rhetoric and Civility</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td>Course Description: Relationship between rhetoric and civility historically and in contemporary times.</td>
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<td>Prerequisite: CO 150.</td>
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<td>SPCM 420</td>
<td>Political Communication</td>
<td>3</td>
<td>3-0-0</td>
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<td>Course Description: Rhetoric of political campaigns.</td>
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<td>Prerequisite: None.</td>
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<td>SPCM 429</td>
<td>Environmental Discourse</td>
<td>3</td>
<td>3-0-0</td>
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<td>Course Description: Environmental communication in advocacy campaigns, media representations of science, encounters with nature, and public policy.</td>
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<td>Prerequisite: None.</td>
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<td>SPCM 431</td>
<td>Communication, Language, and Thought</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td>Course Description: Influence of rhetoric, ranging from spoken language to electronically mediated communication, on human understanding and Western thought.</td>
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<td>Prerequisite: None.</td>
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<td>SPCM 433</td>
<td>Communication in Organizations</td>
<td>3</td>
<td>3-0-0</td>
<td>No.</td>
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<td>Course Description: Communication theory and strategy for empowerment of non-supervisory and supervisory personnel.</td>
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<td>Prerequisite: None.</td>
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</tbody>
</table>
SPCM 434  Intercultural Communication  Credits: 3 (3-0-0)
Course Description: Cultural influences on communication between people of different nations; communication rules/norms in specific cultures, cultural adaptation.
Prerequisite: CO 150.
Registration Information: Must have taken minimum of 30 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 436  Conflict Management and Communication  Credits: 3 (3-0-0)
Course Description: Theories and principles of communication in conflict management; application to conflict resolution situations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 437  Studies in Persuasion  Credits: 3 (3-0-0)
Course Description: Rhetorical and behavioral theories of persuasion applied to persuasive practice in public and interpersonal arenas of social influence.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 438  Communicating in the Health Clinic  Credits: 3 (3-0-0)
Course Description: Synthesis of central issues in Communication Studies; examination of their relevance to students' professional, personal, and civic endeavors.
Prerequisite: SPCM 100 and SPCM 201 and SPCM 207 and SPCM 130.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Seniors in Communication Studies major only
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 445  Chicano/a Film and Video  Credits: 3 (2-2-0)
Also Offered As: ETST 454.
Course Description: Emergence of Chicano/a cinema from a place of displacement, resistance, and affirmation found in contemporary Chicano/a film.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SPCM 454 and ETST 454.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 450  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: Directed experience of communication techniques and procedures in the community with periodic faculty consultation.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 451  Topics in Public Address  Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Registration Information: Graduate standing with 12 additional 300- and 400-level credits in communication studies, history, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 455  Narrative Fiction Film as a Liberal Art  Credits: 3 (2-3-0)
Also Offered As: LB 455.
Course Description: Narrative fiction film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both SPCM 455 and LB 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 457  Communication Studies Capstone  Credits: 3 (3-0-0)
Course Description: Synthesis of central issues in Communication Studies; examination of their relevance to students' professional, personal, and civic endeavors.
Prerequisite: SPCM 100 and SPCM 201 and SPCM 207 and SPCM 130.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Seniors in Communication Studies major only
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 460  Deliberative Theory and Practice  Credits: 3 (0-0-3)
Course Description: Survey of current theory and practice connected to deliberative democracy.
Prerequisite: SPCM 408.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 479  Communication Studies Capstone  Credits: 3 (3-0-0)
Course Description: Synthesis of central issues in Communication Studies; examination of their relevance to students' professional, personal, and civic endeavors.
Prerequisite: SPCM 100 and SPCM 201 and SPCM 207 and SPCM 130.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Seniors in Communication Studies major only
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 482A  Study Abroad: Cinematic Rome  Credits: 3 (3-0-0)
Course Description: Evaluate and discuss ten primary films, along with excerpts from a number of others. Topics: Images of Ancient Rome; Italian Fascism and Its Memory; Italian Neorealism; Images of "Americans" in Rome, and Rome in America; Fellini's Rome; and Urban Angst, Roman Style. Analyze how Rome functions as a "character" in the movies, the artistic representations of Roman monuments and streetscapes, and the rhetorical functions of Italian cinema.
Prerequisite: None.
Registration Information: Must have concurrent registration in SPCM 382A. Completion of AUCC Category 2.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 486  Practicum  Credits: Var[1-18] (0-0-0)
Course Description: Directed experience of communication techniques and procedures in the community with periodic faculty consultation.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 508  Deliberative Theory and Practice  Credits: 3 (0-0-3)
Course Description: Survey of current theory and practice connected to deliberative democracy.
Prerequisite: SPCM 408.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 511  Topics in Public Address  Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public address research; analysis of public discourse of selected movements or periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Registration Information: Graduate standing with 12 additional 300- and 400-level credits in communication studies, history, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 538  Communicating in the Health Clinic  Credits: 3 (3-0-0)
Course Description: Organizational, interpersonal, and intercultural dimensions of communicating in public health clinical settings.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SPCM 540  Rhetoric, Race, and Identity  Credits: 3 (3-0-0)
Also Offered As: ETST 540.
Course Description: Critical race theory and its relevance to rhetorical
studies.
Prerequisite: SPCM 434 and SPCM 300 to 481 - at least 12 credits.
Registration Information: Credit not allowed for both SPCM 540 and
ETST 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 570  Instructional Communication Theory and Practice  Credits:
3 (0-0-3)
Course Description: Communication theory and research in instructional
contexts. Designed for current or prospective teachers.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 592  Seminar-Topics in Speech Communication  Credits: 3 (0-0-3)
Course Description: Prerequisite: SPCM 3**** to 499 - at least 15 credits or SPCM 3** to 499 -
at least 15 credits or E 3**** to 499 - at least 15 credits or E 3** to 499 -
at least 15 credits or SP 3**** to 499 - at least 15 credits or SP 3** to 499 -
at least 15 credits or SPCC 3**** to 499 - at least 15 credits or SPCC 3** to
499 - at least 15 credits or E CC 3**** to 499 - at least 15 credits or E
CC 3** to 499 - at least 15 credits. Designed for current or prospective teachers.
Prerequisite: None.
Registration Information: Graduate standing can substitute for 300-400
level credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 601  History of Rhetorical Theory  Credits: 3 (3-0-0)
Course Description: Rhetorical theories and theorists from the classical
period to the present.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Fifteen 300- and 400-level credits in
communication studies and/or English.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SPCM 604  Rhetoric of Everyday Life  Credits: 3 (3-0-0)
Course Description: Contemporary theories of rhetoric and of everyday
life.
Prerequisite: SPCM 412 and SPCM 300 to 400 - at least 12 credits.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing can substitute for 300-400
SPCM credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 611  Topics in Public Address  Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues in public
address research; analysis of public discourse of selected movements or
periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing can substitute for SPCM 311
or SPCM 411; 12 additional credits of 300-400 level in Communication
Studies, History, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 612  Rhetorical Criticism  Credits: 3 (3-0-0)
Course Description: Traditional and contemporary methods for analyzing
persuasive discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Fifteen credits of 300-400 level communication
studies or journalism.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 620  Rhetoric and Public Affairs  Credits: 3 (0-0-3)
Course Description: Theoretical and methodological issues in public
address research; analysis of public discourse of selected movements or
periods in U.S. history.
Prerequisite: SPCM 311 or SPCM 411.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing can substitute for SPCM 311
or SPCM 411; 12 additional credits of 300-400 level in Communication
Studies, History, or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 623  Feminist Theories of Discourse  Credits: 3 (0-0-3)
Course Description: Exploration and evaluation of contemporary feminist
theories of rhetoric and discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 632  Theories of Interpersonal Communication  Credits: 3 (0-0-3)
Course Description: Exploring and evaluating of contemporary feminist
theories of rhetoric and discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 633  Discourse, Work, and Organization  Credits: 3 (0-0-3)
Course Description: How organizing processes and discursive practices
create, maintain, and destroy diverse forms of work in society.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to graduate school.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SPCM 634 Communication and Cultural Diversity Credits: 3 (0-0-3)
Course Description: Ethnographic approach to communication issues and concerns in a global context.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Admission to graduate school.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 638 Communication Research Methods Credits: 3 (3-0-0)
Course Description: Examination of communication philosophies and perspectives; analysis of modern theories of face-to-face communication.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Graduation standing or fifteen 300-400 level credits in Communication Studies and/or English.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 639 Communication Theory Credits: 3 (3-0-0)
Course Description: Examination of communication philosophies and perspectives; analysis of modern theories of face-to-face communication.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Graduation standing or fifteen 300-400 level credits in Communication Studies and/or English.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 646 Media Theory Credits: 3 (3-0-0)
Course Description: Survey of the broad range of rhetorical/qualitative theories that inform media studies.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduation standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 647 Media Industries Credits: 3 (3-0-0)
Course Description: Political economy of the media both in the U.S. and globally, including how the media system operates and with what effects.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduation standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 648 Media Texts Credits: 3 (3-0-0)
Course Description: Practical and theoretical implications for criticism in treating media products as texts; various approaches to textual or discourse analysis.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Graduation standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 649 Media Audiences Credits: 3 (3-0-0)
Course Description: Theoretical and methodological issues concerning how audiences use and interpret media.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Graduate standing or fifteen 300- and 400-level credits in Communication Studies and/or English.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 650 Contemporary Issues in Media Credits: 3 (0-0-3)
Course Description: Ever-changing media culture and landscape and how it affects personal, professional, and public lives.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Admission to graduate school.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 657 Speech Communication Pedagogy Credits: 3 (3-0-0)
Course Description: Instructional practices and theories in speech.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Admission to communication studies master's program.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 664 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Direction of communication studies fieldwork connected to the CSU Center for Public Deliberation under professional supervision.
Prerequisite: SPCM 408 and SPCM 508, may be taken concurrently.
Restriction: Must be a Graduate.
Registration Information: Graduation standing.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 684 Practicum Credits: Var[1-18] (0-0-0)
Course Description: Direction of communication studies fieldwork connected to the CSU Center for Public Deliberation under professional supervision.
Prerequisite: SPCM 408 and SPCM 508, may be taken concurrently.
Restriction: Must be a Graduate.
Registration Information: Graduation standing.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description: Seminar in Communication Studies topics.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Independent Study in Communication Studies.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
SPCM 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SPCM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.

SPCM 701 Seminar in Academic Writing Credits: 3 (3-0-0)
Course Description: Best practices of academic writing for publication in communication studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 702 Professional Writing and Public Scholarship Credits: 3 (0-0-3)
Course Description: Writing in specialized professional contexts. Adapting scholarly information for extra-disciplinary and lay audiences.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 712 Critical/Cultural Analysis in Communication Credits: 3 (0-0-3)
Course Description: Advanced instruction in critical/cultural analysis as understood by the field of Communication Studies.
Prerequisite: None.
Restriction: Must be a: Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 792A Seminar: Rhetoric and Civic Engagement Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to rhetorical and/or civic engagement.
Prerequisite: None.
Restriction: Must be a: Graduate.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 792B Seminar: Relational/Organizational Communication Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to relational and/or organizational communication.
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 792C Seminar: Media and Visual Culture Credits: 3 (0-0-3)
Course Description: Advanced readings in particular themes, questions, and topics pertaining to media and/or visual culture.
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 793 Seminar: Communications Research Methods Credits: 3 (0-0-3)
Course Description: Advanced research method(s) in the field of Communication Studies.
Prerequisite: SPCM 638.
Restriction: Must be a: Graduate.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SPCM 798 Research Credits: Var[1-18] (0-0-0)
Course Description: PhD students in Communication will work on Qualifying Exam/Portfolio.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SPCM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Composition-CO (CO)

Courses

CO 130 Academic Writing (GT-C01) Credits: 3 (3-0-0)
Course Description: Academic writing, critical thinking, and critical reading through study of a key academic issue.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Introductory Writing (GT-C01).
CO 150  College Composition (GT-CO2)  Credits: 3 (3-0-0)
Course Description: Understanding and writing for rhetorical situations; critical reading and response; writing source-based argument for academic and public audiences.
Prerequisite: CO 130.
Registration Information: Must have taken CO 130 or Composition Challenge Exam (score of 3, 4, or 5) or have a SAT verbal/critical reading score of 600 or above or ACT COMPOSITE score of 26 or above or Directed Self-Placement Survey score of 15. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Intermediate Writing 1A, Intermediate Writing (GT-CO2).

CO 300  Writing Arguments (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Reading, analyzing, researching, and writing arguments.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301A  Writing in the Disciplines: Arts and Humanities (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in arts and humanities.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301B  Writing in the Disciplines: Sciences (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in sciences.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301C  Writing in the Disciplines: Social Sciences (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in social sciences.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301D  Writing in the Disciplines: Education (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Learning writing strategies for addressing general audiences in education.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 302  Writing in Digital Environments (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Writing strategies, patterns and approaches for online materials.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 301  Writing Arguments (GT-CO3)  Credits: 3 (3-0-0)
Course Description: Reading, analyzing, researching, and writing arguments.
Prerequisite: CO 150 or HONR 193.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).

CO 401  Writing and Style  Credits: 3 (3-0-0)
Course Description: Advanced expository and persuasive writing emphasizing modes, strategies, and styles for a variety of audiences and purposes.
Prerequisite: CO 300 or CO 301A to 301D or CO 302.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CO 402  Principles of Digital Rhetoric and Design  Credits: 3 (3-0-0)
Course Description: Advanced study of rhetorical contexts shaping online texts. Includes instruction in coding and digital design.
Prerequisite: None.
Registration Information: Must have completed AUCC category 2.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Computer Info Systems-CIS (CIS)

Courses

CIS 120  Business Programming Fundamentals  Credits: 3 (3-0-0)
Course Description: File and operating systems for business application development. Business program development using a high-level programming language.
Prerequisite: None.
Registration Information: Credit not allowed for both CIS 120 and CIS 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 200  Business Information Systems  Credits: 3 (3-0-0)
Course Description: Use of information technology (IT) to enable knowledge workers, support business processes, and grow the business.
Prerequisite: BUS 150 or CS 110.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
CIS 210 Information Technology in Business Credits: 3 (3-0-0)
Course Description: Introduction to information systems: the IS profession; hardware, software, and programming; web and database applications; data analysis tools.
Prerequisite: CIS 200, may be taken concurrently.
Registration Information: Credit not allowed for both CIS 210 and CIS 120.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 240 Application Design and Development Credits: 3 (3-0-0)
Course Description: Software engineering methods including design, implementation, and testing using structured and event-driven techniques, logic, and data structures.
Prerequisite: CIS 210.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 301 End User Computing Credits: 3 (3-0-0)
Course Description: End user applications in a Graphical User Interface environment including spreadsheet, word processing, and presentation graphics; Internet concepts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 320 Project Management for Information Systems Credits: 3 (3-0-0)
Course Description: Project management concepts including work breakdown structure, estimating, scheduling, tools, and reports.
Prerequisite: CIS 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 340 Advanced Application Design and Development Credits: 3 (3-0-0)
Course Description: Design and construction of business applications using object-orientation and advanced data structures.
Prerequisite: CIS 240.
Registration Information: Credit not allowed for both CIS 340 and CIS 220.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 350 Operating Systems and Networks Credits: 3 (3-0-0)
Course Description: Multiuser and network operating systems; basic networking concepts including security, transmission, performance, and topologies.
Prerequisite: CIS 210.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 355 Business Database Systems Credits: 3 (3-0-0)
Course Description: Physical and logical design, implementation, and administration of databases.
Prerequisite: CIS 210.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 360 Systems Analysis and Design Credits: 3 (3-0-0)
Course Description: Traditional and cutting-edge systems analysis and design techniques, with emphasis on object-oriented approaches.
Prerequisite: CIS 240.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 370 Business Intelligence Credits: 3 (3-0-0)
Course Description: Techniques and technologies for deriving business value from the integration, mining, and transformation of data.
Prerequisite: CIS 200 and MKT 300.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 410 Web Application Development Credits: 3 (3-0-0)
Course Description: Web development techniques and strategies including Active Server Pages using VBScript, JavaScript, ColdFusion; security, web design.
Prerequisite: CIS 355 and CIS 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 411 Enterprise Resource Planning Systems Credits: 3 (3-0-0)
Course Description: Introduction to enterprise resource planning (ERP) systems concepts, business processes impacted by ERP, systems and software integration.
Prerequisite: (ACT 220) and (FIN 300 or FIN 305) and (MGT 305 or MGT 320) and (MKT 300 or MKT 305).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 413 Advanced Networking and Security Credits: 3 (3-0-0)
Course Description: Modern communication standards, protocol systems; network security, security policies, attack and protection mechanisms, legal and ethical issues.
Prerequisite: CIS 240 and CIS 350.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CIS 455 Advanced Database Management Credits: 3 (3-0-0)
Course Description: Advanced data management topics including performance tuning, concurrency control, security, object-oriented databases, and data warehousing.
Prerequisite: CIS 355.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Registration Information</th>
<th>Terms Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 487</td>
<td>Internship</td>
<td>3 (0-9-0)</td>
<td>Supervised and planned work experience paralleling concentration in industry.</td>
<td>CIS 355 and CIS 360</td>
<td>No.</td>
<td>Fall, Spring, Summer</td>
<td>Instructor Option</td>
<td>No.</td>
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<tr>
<td>CIS 492</td>
<td>Seminar</td>
<td>3 (3-0-0)</td>
<td>Current topics in computer-based information systems.</td>
<td>None</td>
<td>No.</td>
<td>Spring</td>
<td>Instructor Option</td>
<td>No.</td>
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<tr>
<td>CIS 495</td>
<td>Independent Study</td>
<td>Var[1-18] (0-0-0)</td>
<td>Methods to solve data visualization problems; critique and evaluate current systems; develop skills in the construction of data visualization.</td>
<td>CIS 575 or CIS 605</td>
<td>No.</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>CIS 570</td>
<td>Business Intelligence</td>
<td>3 (3-0-0)</td>
<td>Harnessing vast data stores to solve problems, enhance decision-making, discover new business opportunities, and to derive additional benefits.</td>
<td>None</td>
<td>Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>CIS 575</td>
<td>Applied Data Mining and Analytics in Business</td>
<td>3 (3-0-0)</td>
<td>Data mining is a process of selecting, exploring and modeling large amounts of data to identify patterns and relationships among key variables.</td>
<td>STAT 204</td>
<td>No.</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>CIS 576</td>
<td>Business Data Visualization</td>
<td>3 (3-0-0)</td>
<td>Methods to solve data visualization problems; critique and evaluate current systems; develop skills in the construction of data visualization.</td>
<td>None</td>
<td>Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>CIS 600</td>
<td>Information Technology and Project Management</td>
<td>3 (3-0-0)</td>
<td>Strategic role in and management of information technology and software development projects.</td>
<td>None</td>
<td>Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>CIS 601</td>
<td>Enterprise Computing and Systems Integration</td>
<td>3 (3-0-0)</td>
<td>Integrated extended enterprise planning and execution systems concepts including ERP, CRM, SCM, MRP II, business processes, front/back office systems.</td>
<td>None</td>
<td>Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Credit not allowed for both CIS 601 and MGT 601. Sections may be offered: Online</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>CIS 602</td>
<td>Information Management and Control</td>
<td>3 (3-0-0)</td>
<td>Strategic role in and management of information technology and software development projects.</td>
<td>None</td>
<td>Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>CIS 603</td>
<td>Information Security</td>
<td>3 (3-0-0)</td>
<td>Strategic role in and management of information technology and software development projects.</td>
<td>None</td>
<td>Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online</td>
<td>Fall, Spring, Summer</td>
<td>Traditional</td>
<td>No.</td>
</tr>
</tbody>
</table>
CIS 605 Business Visual Application Development Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application systems focusing upon the establishment of economical software that is reliable and cross platform.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 606 Application Software Infrastructure Credits: 3 (3-0-0)
Course Description: Design, construction, and testing of business application software infrastructure including hardware, operating software, and communications network.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 610 Software Development Methodology Credits: 3 (3-0-0)
Course Description: Methods for all phases of software development focusing upon the establishment of economical software that is reliable and cross platform.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 611 Object-Oriented Systems Credits: 3 (3-0-0)
Course Description: Object-oriented and web-based software; object model describing classes; relationships to other objects, attributes, and operations.
Prerequisite: CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 620 IT Communications Infrastructure Credits: 3 (3-0-0)
Course Description: Technical aspects of information communications, business considerations; wireless technology, architecture, and applications.
Prerequisite: CIS 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 655 Business Database Systems Credits: 3 (3-0-0)
Course Description: Database analysis, design, administration; data modeling; data sublanguages, query facilities; distributed database systems.
Prerequisite: CIS 605.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 665 E-Business Application Technologies Credits: 3 (3-0-0)
Course Description: Developing E-business (B2B and B2C) through construction and deployment.
Prerequisite: CIS 605 and CIS 606 and CIS 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.B.A., M.C.I.S., M.S.B.A., or M.E. program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 670 Advanced IT Project Management Credits: 3 (3-0-0)
Course Description: Advanced tools, techniques and skills for advanced risk management, change movement, and performance/control measures in cross-functional projects.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CIS 675 Agile Management and Product Development Credits: 3 (3-0-0)
Course Description: Business model process optimization; managing rapid product development; incorporating constituent feedback throughout the product life cycle.
Prerequisite: CIS 600.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 676 Information Technology Management Credits: 3 (3-0-0)
Course Description: Strategic information technology management of business, technical, system and information services.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program in business. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CIS 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: A special assignment related to the student’s needs and the program’s goals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
Computer Science-CS (CS)

Courses

CS 110 Personal Computing Credits: 4 (3-3-0)
Course Description: Hardware/software concepts, Internet services, OS commands, electronic presentations, spreadsheets, databases, programming concepts.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 110 and BUS 150. Sections may be offered Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 122 Theory for Introductory Programming Credit: 1 (0-0-1)
Also Offered As: MATH 122.
Course Description: Set theory, definitions operations, Venn diagrams, power sets, propositional logic and proofs. Functions; loop invariants.
Prerequisite: MATH 118.
Registration Information: Must have concurrent registration in CS 161.
Credit not allowed for both CS 122 and MATH 122. Credit not allowed for students who have completed CS 160. Sections may be offered Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 150 Interactive Programming with Java Credits: 4 (3-0-1)
Course Description: Introduction to object-oriented programming with Java; problem-solving, creating applets for Web pages, and graphical user interfaces.
Prerequisite: MATH 118 or 119 or 121 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 155 Introduction to Unix Credit: 1 (1-0-0)
Course Description: Unix shell commands, utilities (editors, sorting, file management), shell scripting.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 156 Introduction to C Programming I Credit: 1 (1-0-0)
Course Description: Basic elements of language structure, data types, expressions, program control flow and modularity.
Prerequisite: (CS 155, may be taken concurrently) and (MATH 118).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 157 Introduction to C Programming II Credit: 1 (1-0-0)
Course Description: More basic design types, function usage and strings. Arrays, user-defined types and structures, enumerated types, recursion, dynamic storage allocation.
Prerequisite: (CS 156, may be taken concurrently) and (MATH 118).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CS 158 Mathematical Algorithms in C Credit: 1 (0-2-0)
Also Offered As: MATH 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 151 and CS 156 and MATH 160.
Registration Information: Credit not allowed for both CS 158 and MATH 158.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 160 Foundations in Programming Credits: 4 (3-2-0)
Course Description: Introduction to computer theory, programming and systems. Sets, functions, logic. Procedural programming in Java. Computer and data models.
Prerequisite: MATH 118 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 161 Object-Oriented Problem Solving Credits: 4 (3-2-0)
Course Description: Fundamental object-oriented concepts, inheritance, polymorphism, basic algorithms, linked lists, assertions, recursion, induction, counting.
Prerequisite: (CS 160 with a minimum grade of C) and (MATH 141, may be taken concurrently or MATH 155, may be taken concurrently or MATH 160, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 163 Java (CS1) No Prior Programming Credits: 4 (3-2-0)
Course Description: Computer programming in Java for students without previous programming experience. Topics include variables, assignment, expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
CS 164  Java (CS1) Prior Programming Credits: 4 (3-2-0)
Course Description: Computer programming in Java for students with limited programming experience. Problem decomposition for good design; expressions, operators, booleans, conditionals, characters and strings, control loops, arrays, objects and classes, file input/output, interfaces, recursion, lists, and sorting.
Prerequisite: MATH 124 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following courses: CS 160, CS 163, or CS 164.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 165  Java (CS2) Data Structures and Algorithms Credits: 4 (3-2-0)
Course Description: Object oriented concepts, assertions, inheritance, polymorphism, algorithms and data structures using Java.
Prerequisite: (CS 163 with a minimum grade of C or CS 164 with a minimum grade of C) and (MATH 160 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 192  First-Year Seminar—Computer Science Credits: 2 (0-0-0)
Course Description: Introduction to the computer science major; basic computer skills; campus resources, and various subject-specific topics.
Prerequisite: None.
Registration Information: Computer science majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 200  Algorithms and Data Structures Credits: 4 (3-2-0)
Course Description: Data structures; abstract data types; algorithm correctness; complexity analysis; sorting, searching, hashing.
Prerequisite: (CS 161 with a minimum grade of C or MATH 141 with a minimum grade of C or MATH 155 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 220  Discrete Structures and their Applications Credits: 4 (3-0-1)
Course Description: Integer representations and properties, propositions, predicates, sets, functions, program proofs, induction, counting, complexity; Python implementations of these concepts.
Prerequisite: (CS 165 with a minimum grade of C) and (MATH 160 with a minimum grade of C).
Registration Information: Must register for lecture and recitation. Credit not allowed for both CS 165 and CS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 253  Software Development with C++ Credits: 4 (3-0-1)
Course Description: Developing and modifying large software. Relating programming language to its machine implementation. C++ programming for experienced programmers.
Prerequisite: (CS 200 with a minimum grade of C) and (CS 270 with a minimum grade of C or ECE 251 with a minimum grade of C).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 270  Computer Organization Credits: 4 (3-2-0)
Course Description: Data representation, arithmetic, assembly and C language, digital logic and systems, Boolean algebra, circuits, CPU and memory models, state machines.
Prerequisite: (CS 161 with a minimum grade of C and CS 200, may be taken concurrently) and (MATH 141 with a minimum grade of C or MATH 155 with a minimum grade of C or MATH 160 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 295  Independent Study Credits: Var[1-4] (0-0-0)
Course Description: Investigation of special topics under direction of computer science faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 314  Software Engineering Credits: 3 (3-0-0)
Course Description: Methods used to develop large-scale software projects in industry emphasizing design, implementation, and testing.
Prerequisite: CS 253 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 320  Algorithms—Theory and Practice Credits: 3 (3-0-0)
Course Description: Analysis, design, implementation and applications of algorithms.
Prerequisite: (CS 200 with a minimum grade of C and MATH 161 with a minimum grade of C) and (MATH 229 with a minimum grade of C or MATH 369 with a minimum grade of C).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 356  Systems Security Credits: 3 (3-0-0)
Course Description: Computer and system security, authentication, access control, malicious software, and software security.
Prerequisite: (CS 253 with a minimum grade of C) and (CS 270 with a minimum grade of C or ECE 251 with a minimum grade of C) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CS 370 Operating Systems Credits: 3 (3-0-0)
Course Description: Introduction to operating systems including memory organization, I/O control, multitasking, process control, coordination, and resource management.
Prerequisite: (CS 200 with a minimum grade of C) and (CS 270 with a minimum grade of C or ECE 251 with a minimum grade of C).
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 410 Introduction to Computer Graphics Credits: 4 (3-2-0)
Course Description: Graphics hardware and software; drawing simple objects; coordinate transformations in 2D and 3D; modeling and viewing complex 2D and 3D objects.
Prerequisite: (CS 253 with a minimum grade of C) and (MATH 229 with a minimum grade of C or MATH 369 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 414 Object-Oriented Design Credits: 4 (3-3-0)
Course Description: Object-oriented methods for large-scale software systems. Software design for reuse using patterns. WWW applications in languages, e.g., Java.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 420 Introduction to Analysis of Algorithms Credits: 4 (3-0-1)
Course Description: Efficiency analysis, correctness proofs, design strategies, illustrations from domains such as graph theory, scheduling and optimization, geometry.
Prerequisite: CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 425 Introduction to Bioinformatics Algorithms Credits: 4 (3-2-0)
Course Description: Algorithms for analysis of large scale biological data.
Prerequisite: CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 430 Database Systems Credits: 4 (3-2-0)
Course Description: Database analysis, design, administration, implementation, hierarchical, network relational models; data sublanguages; query facilities.
Prerequisite: CS 314 with a minimum grade of C or CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 435 Introduction to Big Data Credits: 4 (3-2-0)
Course Description: Fundamental issues in Big Data: data organization, storage, retrieval, analytics, and knowledge discovery at scale.
Prerequisite: CS 370 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 440 Introduction to Artificial Intelligence Credits: 4 (3-2-0)
Course Description: Concepts, representations, and algorithms for applications of problem solving search, logical reasoning and machine learning.
Prerequisite: CS 253 with a minimum grade of C and CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 453 Introduction to Compiler Construction Credits: 4 (3-0-1)
Course Description: Functional components of a compiler: modules, interfaces, lexical and syntax analysis, error recovery, resource allocation, code generation.
Prerequisite: CS 314 with a minimum grade of C.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 454 Principles of Programming Languages Credits: 4 (3-3-0)
Course Description: Language design concepts; functional programming; interpreter support for environments, procedures, recursion, types, objects; language paradigms.
Prerequisite: CS 253 with a minimum grade of C and CS 320 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 455 Introduction to Distributed Systems Credits: 4 (3-2-0)
Course Description: Distributed systems including model of distributed computations; concurrency; thread pools and scalable servers; distributed mutual exclusion; cloud computing; distributed graph algorithms; data representation formats; atomic transactions; large-scale storage systems; distributed shared memory; and overlays.
Prerequisite: CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. CS majors and minors only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CS 457  Computer Networks and the Internet Credits: 4 (3-3-0)
Course Description: Principles of communications, local area networks, communication protocols, TCP/IP, and the Internet.
Prerequisite: (CS 370 with a minimum grade of C and CS 253 with a minimum grade of C) or CS 253 with a minimum grade of C or STAT 301 with a minimum grade of C or STAT 303 with a minimum grade of C or ECE 303 with a minimum grade of C or STAT 307 with a minimum grade of C or ERHS 307 with a minimum grade of C or STAT 311 with a minimum grade of C or STAT 315 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 464  Principles of Human-Computer Interaction Credits: 4 (3-2-0)
Course Description: History and trends in human-computer interaction; user-centered design techniques; prototyping; experimental methods for the evaluation of technology.
Prerequisite: CS 253 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 470  Computer Architecture Credits: 4 (3-2-0)
Course Description: Instruction set; hardwired, microprogramming; memory; arithmetic; I/O and buses; performance evaluation; pipelining, RISC.
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 475  Parallel Programming Credits: 4 (3-3-0)
Course Description: Parallel programming techniques for shared-memory and message-passing systems; process synchronization, communication; example languages.
Prerequisite: CS 370 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 486  Practicum Credits: Var[1-4] (0-0-0)
Course Description: Supervised work experience in approved computer science setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 495  Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for any combination of CS 486, CS 495.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 498  Research Credits: Var[1-4] (0-0-0)
Course Description: Supervised research in computer science.
Prerequisite: None.
Registration Information: Computer science majors only. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 510  Image Computation Credits: 4 (3-3-0)
Course Description: Image generation theory and implementation, image manipulation/interpretation. Ray tracing, geometric and photometric manipulation, image matching.
Prerequisite: CS 410.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 514  Software Product and Process Evaluation Credits: 4 (3-3-0)
Course Description: Software development process modeling and evaluation; software metrics, testing, verification, validation; experimental methods in software engineering.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 517  Software Specification and Design Credits: 4 (3-3-0)
Course Description: Rigorous techniques for modeling, specifying, and analyzing software requirements and designs; reusable software development.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 518  Distributed Software System Development Credits: 4 (3-2-0)
Course Description: Principles of developing distributed systems; middleware technologies and techniques for building complex distributed component-based systems.
Prerequisite: CS 414.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 520  Analysis of Algorithms Credits: 4 (3-3-0)
Course Description: Asymptotic complexity, algorithm complexity, and problem complexity; the Master Method; parallel algorithms; algorithm design.
Prerequisite: CS 420.
Registration Information: Must register for lecture and laboratory. Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
CS 530  Fault-Tolerant Computing  Credits: 4 (3-3-0)
Course Description: Achieving high reliability and fault tolerance. Fault modeling, testing, reliability evaluation, redundancy, fault tolerance. (NT-O)
Prerequisite: CS 370.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 533  Database Management Systems  Credits: 4 (3-2-0)
Course Description: Theory and implementation of concurrency control, recovery, and query processing as it applies to centralized and distributed systems.
Prerequisite: CS 430.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 540  Artificial Intelligence  Credits: 4 (3-3-0)
Course Description: Knowledge representation and reasoning, search, planning, evolutionary computation, data mining, information retrieval, intelligent Web, agent systems.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 545  Machine Learning  Credits: 4 (3-3-0)
Course Description: Computational methods that allow computers to learn; neural networks, decision trees, genetic algorithms, bagging and boosting.
Prerequisite: CS 440.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 553  Algorithmic Language Compilers  Credits: 4 (3-3-0)
Course Description: Compiler construction; lexical scanner generators, parser generators, dataflow analysis, optimization.
Prerequisite: CS 453.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 555  Distributed Systems  Credits: 4 (3-2-0)
Course Description: Principles, paradigms, protocols and algorithms underlying modern distributed systems.
Prerequisite: CS 455.
Registration Information: Must register for lecture and laboratory. Computer Science graduate students only. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 556  Computer Security  Credits: 4 (3-2-0)
Course Description: Topics in computer security: concepts, threats, risks, access control models, trusted systems, cryptography, authentication.
Prerequisite: CS 356 or CS 455.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 557  Advanced Networking  Credits: 4 (3-3-0)
Course Description: Core internet protocols, including transport, routing, and security protocols. Protocol design principles. Network measurements and assessment.
Prerequisite: CS 457.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 558  Bioinformatics Algorithms  Credits: 4 (3-2-0)
Also Offered As: STAT 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Students should already have knowledge of a contemporary programming language. Must register for lecture and laboratory. Credit not allowed for both CS 548 and STAT 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CS 561  Hardware/Software Design of Embedded Systems  Credits: 4 (3-3-0)
Also Offered As: ECE 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high-level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 561 and ECE 561.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 570  Advanced Computer Architecture  Credits: 4 (3-3-0)
Course Description: Pipelined CPU design. Superscalar architectures and instruction-level parallelism. Cache and memory hierarchy design.
Storage systems.
Prerequisite: CS 470.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 575  Parallel Processing  Credits: 4 (3-3-0)
Course Description: Parallel and distributed computing models, algorithms, mapping and performance evaluations, parallel computing tools and applications.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

CS 612  Topics in Computer Graphics  Credits: 4 (3-2-0)
Course Description: Computer graphics research topics.
Prerequisite: CS 510.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614A  Advanced Topics in Software Engineering: Specification and Design  Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614B  Advanced Topics in Software Engineering: Testing and Verification  Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614C  Advanced Topics in Software Engineering: Software Environments and Tools  Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614D  Advanced Topics in Software Engineering: Software Measurement, Analysis, and Evaluation  Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 614E  Advanced Topics in Software Engineering: Application Domains  Credits: 4 (3-3-0)
Course Description:
Prerequisite: CS 514 or CS 517 or CS 518.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 620  Advanced Topics in Algorithms  Credits: 4 (3-2-0)
Course Description: Designing and analyzing algorithms and data structures; illustrations from a variety of problem domains.
Prerequisite: CS 520.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 635  Advanced Fault-Tolerant Computing  Credits: 4 (3-3-0)
Course Description: Advanced topics and recent developments in high reliability and fault-tolerant systems.
Prerequisite: CS 530.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 640  Advanced Artificial Intelligence I  Credits: 2 (2-0-0)
Course Description: Research topics in artificial intelligence: genetic algorithms, neural networks, connectionist models; machine learning; planning, automated reasoning.
Prerequisite: CS 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
CS 641 Advanced Artificial Intelligence II Credits: 2 (2-0-0)
Course Description: Advanced research topics in artificial intelligence.
Prerequisite: CS 640.
Restriction: Must be a Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 645 Advanced Machine Learning: Neural Networks Credits: 4 (3-2-0)
Course Description: Study of machine learning research literature and implementations of algorithms for neural networks and reinforcement learning.
Prerequisite: CS 545 with a minimum grade of C.
Restriction: Must be a Graduate.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 646 Machine Learning in Bioinformatics Credits: 4 (3-2-0)
Course Description: Recent research on the applications of machine learning in bioinformatics.
Prerequisite: CS 545 or STAT 560.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 653 Topics in Programming Language Implementation Credits: 4 (3-3-0)
Course Description: Data dependence analysis; code generation.
Prerequisite: CS 553.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 655 Advanced Topics in Distributed Systems Credits: 4 (3-2-0)
Course Description: Issues related to robustness, replication, consistency, scalability, isolation and privacy in large-scale distributed systems.
Prerequisite: CS 555.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656A Advanced Topics in Computer Security: Formal Models of Computer Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 656B Advanced Topics in Computer Security: Models for Privacy and Application Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 655C Advanced Topics in Computer Security: Network Security Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer security.
Prerequisite: CS 556.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 657 Advanced Topics in Computer Networking Credits: 4 (3-2-0)
Course Description: Advanced research topics in computer networks.
Prerequisite: CS 557.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CS 658 Internet Engineering Credits: 4 (3-3-0)
Also Offered As: ECE 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks routing, switching flow control, multicast, performance, and applications.
Prerequisite: CS 457 or ECE 456.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both CS 658 and ECE 658.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Also Offered As: ECE 670B.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a Graduate, Professional.
Registration Information: Credit not allowed for both CS 670B and ECE 670B.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 670C Topics in Architecture/Systems: Distributed Systems Credits: Var[1-4] (0-0-0)
Also Offered As: ECE 670C.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a Graduate, Professional.
Registration Information: Credit not allowed for both CS 670C and ECE 670C.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Also Offered As: ECE 670D.
Course Description:
Prerequisite: CS 570 or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 670D and ECE 670D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 674  Heterogeneous Computing  Credits: 3 (3-0-0)
Also Offered As: ECE 674.
Course Description: Allocation of resources to tasks in parallel and distributed heterogeneous computing systems. A variety of computational environments are considered.
Prerequisite: CS 570 or CS 575 or ECE 550A or ECE 550B or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both CS 674 and ECE 674.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

CS 675  Advanced Parallel Computing  Credits: 4 (3-3-0)
Course Description: Parallel computing, computational models, parallel languages and algorithms, distributed simulation, Internet and mobile computing, parallel search.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CS 692  Seminar  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 787  Internship  Credit: 1 (0-3-0)
Course Description: Summer internship experience in computer science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 793  Research Seminar in Computer Science  Credits: 4 (0-0-4)
Course Description: Research methods in specific areas of computer science.
Prerequisite: None.
Registration Information: Graduate standing in computer science.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

CS 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Computing Technology-CT (CT)

Courses

CT 310  Web Development  Credits: 4 (3-3-0)
Course Description: Web development languages used to create fully functional dynamic web sites; server and client scripting, database access and security issues.
Prerequisite: CS 200.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CT 320  Network and System Administration  Credits: 4 (3-3-0)
Course Description: Installation of network and operating system services, management and support; upgrades, security, backups.
Prerequisite: CS 155 and CS 156 or CS 253.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Construction Management-CON (CON)
Courses

CON 101 Introduction to Construction Management Credits: 3 (3-0-0)
Course Description: Identify and understand relationships among participants in the construction process and its history.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 131 Graphic Communications for Construction Credits: 2 (0-4-0)
Course Description: Reading technical drawings, 2D/3D visualization, manual drafting techniques, introduction to design software applications.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 151 Construction Materials and Methods Credits: 3 (3-0-0)
Course Description: Materials and methods utilized in the design and construction of buildings.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 251 Materials Testing and Processing Credits: 2 (1-2-0)
Course Description: Testing of construction materials for standards and quality. Conduct common quality tests and document the results.
Prerequisite: CON 151.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 261 Construction Surveying Credits: 3 (2-3-0)
Course Description: Surveying fundamentals to field of construction, building layout, measurement procedures, vertical controls, line and grade, surveying instrument operation.
Prerequisite: (CON 131 or INTD 166) and (MATH 125 or MATH 160).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 265 Construction Estimating I Credits: 3 (2-2-0)
Course Description: Integration of construction materials and methods into construction systems that will be incorporated in projects.
Prerequisite: CON 131 and CON 151.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 267 Construction Management Pre-Internship Credit: 1 (0-0-1)
Course Description: Skills and concepts related to successful internships within the construction management industry.
Prerequisite: None.
Registration Information: Construction management majors only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 269 Construction Management Internship Credits: 4 (3-0-4)
Course Description: Industry-recognized methods for work item analysis, quantity surveying, resource estimating, and bid development using work breakdown structures.
Prerequisite: CON 265.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 270 Introduction to Road Construction Credits: 3 (3-0-0)
Course Description: Steps necessary to construct a paved roadway from conception, land acquisition and finance through paving operations and trafficking.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 317 Safety Management Credits: 2 (2-0-0)
Course Description: Safety management in construction, corporate, and institutional environments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 351 Construction Field Management Credits: 2 (1-2-0)
Course Description: Materials and methods used in construction, administrative and organizational planning used to complete a project.
Prerequisite: CON 251, may be taken concurrently and CON 317, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

CON 352 Metal Fabrication for Construction Credits: 2 (1-2-0)
Course Description: Shaping, cutting, and joining of structural and non-structural metal. Emphasis on jobsite safety, economics, and efficiency.
Prerequisite: CON 251.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 359 Structures I Credits: 4 (4-0-0)
Course Description: Behavior of structural components and systems, overview of structural engineering analysis/design process.
Prerequisite: MATH 125.
Registration Information: Junior or senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 360 Electrical and Control Systems Credits: 3 (2-2-0)
Course Description: Electrical and control systems and their application in the construction industry.
Prerequisite: CON 265.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 365 Construction Estimating II Credits: 3 (2-2-0)
Course Description: Industry-recognized methods for work item analysis, quantity surveying, resource estimating, and bid development using work breakdown structures.
Prerequisite: CON 265.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
CON 366 Construction Equipment and Methods  Credits: 3 (2-2-0)
Course Description: Equipment/methods in heavy and highway construction; equipment selection, productivity, and costs. Infrastructure, tunneling, and trenchless technology.
Prerequisite: CON 261.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 367 Construction Contracts/Project Administration  Credits: 3 (3-0-0)
Course Description: Utilization of field engineering systems and procedures to effectively meet project objectives.
Prerequisite: CON 265 and CON 351, may be taken concurrently.
Registration Information: Construction management majors and minors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 370 Asphalt Pavement Materials and Construction  Credits: 3 (2-2-0)
Course Description: Constituents of asphalt pavements; manufacture of asphalt cement, emulsions, and cutbacks; material properties and behavior.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 371 Mechanical and Plumbing Systems  Credits: 3 (3-0-0)
Course Description: Heating, ventilation, air conditioning, plumbing, and fire suppression with emphasis on design, operation, and interaction.
Prerequisite: CON 360, may be taken concurrently or INTD 276, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 384 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 450 Travel Abroad-Sustainable Building  Credits: 3 (3-0-0)
Also Offered As: INTD 450.
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both CON 450 and INTD 450.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

CON 459 Structures II  Credits: 4 (4-0-0)
Course Description: Design of formwork, falsework, and shoring.
Prerequisite: CON 359.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 461 Construction Scheduling and Cost Control  Credits: 3 (2-2-0)
Course Description: Strategies and techniques for efficient scheduling of project activities and control of project costs; emphasis on Critical Path Method.
Prerequisite: CON 365.
Registration Information: Construction management majors and minors only. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 462 Financial Management for Construction  Credits: 3 (3-0-0)
Course Description: Financial statements, financial ratios, applications of engineering economy, cash flow analysis, construction financing, and cost information systems.
Prerequisite: (ACT 205 or ACT 210, may be taken concurrently) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 464 Construction Leadership  Credits: 3 (1-0-2)
Course Description: Leading projects and people in a construction business and application of skills in a construction-based community service learning project.
Prerequisite: CON 365 and CON 367, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 465 Construction Management Professional Practice  Credits: 3 (1-0-2)
Course Description: Professional practice using an understanding of the contractual and working relationships among all participants in the design/construction process.
Prerequisite: (CON 461, may be taken concurrently) and (CON 487A or CON 487B).
Registration Information: Construction management majors only. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 469 Soils Engineering for Construction Managers  Credits: 3 (2-0-1)
Course Description: Soil mechanics, foundation engineering, and foundation construction.
Prerequisite: CON 359.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
**CON 471** Project Management for Mechanical Systems  
**Credits:** 3  
**Course Description:** Fundamental principles of mechanical systems. Presentation and practice of management principles relevant to mechanical projects.  
**Prerequisite:** CON 371 and CON 365, may be taken concurrently.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 476** Sustainable Practice-Design and Construction  
**Credits:** 3  
**Course Description:** Major components of sustainable design/construction: energy, healthy buildings, cultural, natural resources, use, other environment/economic issues.  
**Prerequisite:** None.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 477** Residential Aging-in-Place and Green Building  
**Credits:** 3  
**Course Description:** Aging-in-place and green building aspects of the residential construction market.  
**Prerequisite:** CON 265.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 487A Internship: Construction Management I**  
**Credits:** 6  
**Course Description:** OSHA 10-hour construction safety card.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 502 and CON 562.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 487B Internship: Construction Management II**  
**Credits:** 3  
**Course Description:** Advanced project procurement procedures with a focus on early design phase planning applications and preconstruction management techniques.  
**Prerequisite:** CON 461.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 511 and CON 566.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 495 Independent Study-Construction Management**  
**Credits:** 3  
**Course Description:** Advanced topics related to post-award construction management issues with a focus on multiple project controls and project risk management.  
**Prerequisite:** CON 461.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 512 and CON 560.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 496 Group Study-Construction Management**  
**Credits:** 3  
**Course Description:** Issues and state-of-the-art resources needed to construct, remodel/retrofit, operate and maintain the built environment (buildings and infrastructure). Specifically, resources will include major materials, components and technologies, as well as energy and water resources needed in the different life-cycle phases of the building or infrastructure project.  
**Prerequisite:** None.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 521 and CON 576.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 502 Research in Construction Management I**  
**Credits:** 3  
**Course Description:** Research, discuss, and present current issues and trends in the construction industry related to business, management, engineering, and technology.  
**Prerequisite:** None.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 502 and CON 562.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 503 Research in Construction Management II**  
**Credits:** 3  
**Course Description:** Models and methods of disciplined inquiry used in diverse application-based organizations. Preparation to use disciplined inquiry methods to solve applied problems in construction management or related fields. Topics include problem/topic selection, writing research questions and objectives, literature reviews, selection of research methods, data collection and analysis, and conclusions and implications.  
**Prerequisite:** CON 502.  
**Registration Information:** Credit not allowed for both CON 503 and CON 500.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 511 Project Procurement and Preconstruction**  
**Credits:** 3  
**Course Description:** Advanced project procurement procedures with a focus on early design phase planning applications and preconstruction management techniques.  
**Prerequisite:** CON 461.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 511 and CON 566.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 512 Post-Award Construction Management**  
**Credits:** 3  
**Course Description:** Advanced topics related to post-award construction management issues with a focus on multiple project controls and project risk management.  
**Prerequisite:** CON 461.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 512 and CON 560.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

**CON 521 Sustainable Building & Infrastructure Systems**  
**Credits:** 3  
**Course Description:** Issues and state-of-the-art resources needed to construct, remodel/retrofit, operate and maintain the built environment (buildings and infrastructure). Specifically, resources will include major materials, components and technologies, as well as energy and water resources needed in the different life-cycle phases of the building or infrastructure project.  
**Prerequisite:** None.  
**Registration Information:** Must register for lecture and recitation. Credit not allowed for both CON 521 and CON 576.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.
CON 561 Applied Productivity Improvement Credits: 3 (3-0-0)
Course Description: Existing and emerging tools for productivity enhancement in project and production environment.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 565 Legal Aspects of Construction Process Credits: 3 (3-0-0)
Course Description: Common points of dispute; methods of avoiding disputes among owner, architect, engineer, and contractor.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 567 Preservation and Rehabilitation of Buildings Credits: 3 (3-0-0)
Course Description: Theory and applications of preservation technology used in the management and rehabilitation of historic and archaic buildings.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 568 Construction Industry Institute Practices Credits: 3 (3-0-0)
Course Description: Senior executives from the Construction Industry Institute (CII) present best practices developed by CII over the last 25 years.
Prerequisite: CON 367.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 569 Regulatory Impact on Construction Credits: 3 (3-0-0)
Course Description: Role government plays in the design and construction of the built environment.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 571 Facility Planning and Management Credits: 3 (3-0-0)
Course Description: Planning, organizing and managing large educational and/or commercial facilities.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 575 Managerial Decision Making for Constructors Credits: 3 (3-0-0)
Course Description: Construction and real estate development applications of multi-disciplinary managerial analysis and decision-making techniques.
Prerequisite: None.
Registration Information: Admission to the construction management master's program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

CON 577 Leadership of Sustainable Community Projects Credits: 3 (2-0-1)
Course Description: Learn and apply principles of sustainable construction management through leading and building service-learning projects.
Prerequisite: CON 476 or CON 450 or INTD 450.
Registration Information: Required background check.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

CON 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 592 Seminar Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 687 Internship Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
CON 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 698  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

CON 699  Thesis  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Continuous Registration-CR (CR)

Courses
CR CONRG  Continuous Registration  Credits: 0 (0-0-0)
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Special Course Fee: Yes.

Dance-D (D)

Courses
D 110  Understanding Dance (GT-AH1)  Credits: 3 (3-0-0)
Course Description: Broad examination of dance involving limited student participation in basic dance movements.
Prerequisite: None.
Registration Information: For non-dance majors. Previous dance experience not necessary.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

D 120A  Dance Techniques I: Modern  Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 120B  Dance Techniques I: Ballet  Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 120C  Dance Techniques I: Jazz  Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121A  Dance Techniques II: Modern  Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121B  Dance Techniques II: Ballet  Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 121C  Dance Techniques II: Jazz  Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 120C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 126  Dance Improvisation  Credits: 2 (1-2-0)
Course Description: Organic movement and inventive dance movement through improvisational skills, body physicality, space/direction/level imagery and partnering.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

D 160  Musical Tap Forms  Credits: 2 (0-4-0)
Course Description: Basic tap dance forms with emphasis on terminology, study of rhythm, and tap styles; historical development of tap in American culture.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 220A  Dance Techniques III: Modern  Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 220B  Dance Techniques III: Ballet  Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
D 220C Dance Techniques III: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 121C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 221A Dance Techniques IV: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221B Dance Techniques IV: Ballet Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 221C Dance Techniques IV: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 220C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 226 Dance Choreography I Credits: 2 (1-2-0)
Course Description: Elements of dance composition including space, levels, rhythm, dynamics, qualities of movement, form, style.
Prerequisite: D 121A and D 121B and D 126.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 286 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Dance performance and production experience.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 320A Dance Techniques V: Modern Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 320B Dance Techniques V: Ballet Credits: 5 (0-10-0)
Course Description:
Prerequisite: D 221B.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 320C Dance Techniques V: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 221C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 321A Dance Techniques VI: Modern Credits: 3 (0-6-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321B Dance Techniques VI: Ballet Credits: 5 (0-10-0)
Course Description:
Prerequisite: D 320B.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 321C Dance Techniques VI: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 320C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 324 Teaching Creative Movement for Children Credits: 2 (1-2-0)
Course Description: Theoretical and practical experience in teaching creative movement.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 326 Dance Choreography II Credits: 3 (1-4-0)
Course Description: Advanced choreographic elements: group work, music influence, and nontraditional performance venues.
Prerequisite: D 226.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 330 Ballet Repertory Ensemble Credits: 2 (0-4-0)
Course Description: Classical ballet repertory performance for the stage.
Prerequisite: None.
Registration Information: Written consent of dance faculty.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

D 340 Contemporary Repertory Ensemble Credits: 2 (0-4-0)
Course Description: Contemporary dance repertory performance for the stage.
Prerequisite: None.
Registration Information: Written consent of instructor. Students must audition before given written consent by instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
D 420A Dance Techniques VII: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321A.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 420B Dance Techniques VII: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 420C Dance Techniques VII: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 321C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

D 421A Dance Techniques VIII: Modern Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420A.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 421B Dance Techniques VIII: Ballet Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 421C Dance Techniques VIII: Jazz Credits: 2 (0-4-0)
Course Description:
Prerequisite: D 420C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 424 Ballet Technique Pedagogy Credits: 3 (3-0-0)
Course Description: Theory and practice of ballet technique teaching methods.
Prerequisite: D 324.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 426 Dance Choreography III Credits: 2 (1-2-0)
Course Description: Studies in 20th-century dance composition forms.
Prerequisite: D 321A or D 321B or D 321C.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 427 Dance History I Credits: 3 (3-0-0)
Course Description: History of classical ballet to modern times from its origins in folk dance of Middle Ages and social dance of Renaissance.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

D 428 Dance History II Credits: 3 (3-0-0)
Course Description: History and examination of modern and contemporary dance from United States foundation and diverse global influences.
Prerequisite: None.
Registration Information: Dance major; junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

D 432 Dance Therapy Credits: 3 (2-2-0)
Course Description: Use of dance forms in therapy for mentally and physically handicapped.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

D 434 Modern Technique Pedagogy Credits: 3 (2-3-0)
Course Description: Theory and practice of modern dance technique teaching methods.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 471 Dance Concert Credits: 3 (0-6-0)
Course Description: Demonstration of individual performance and choreographic proficiency in a public performance. Supporting paper and video demonstration required.
Prerequisite: D 326.
Registration Information: Written consent of faculty.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: D 324 or D 424 or D 434.
Registration Information: Written consent of instructor. Student must have taken the course they would be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

D 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Practicum in dance topics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

D 491 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Course Description: Fibers, fabrics, and finishes basic to selection, use, and care.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 192 Design and Merchandising First Year Seminar Credit: 1 (0-0-1)
Course Description: Introduction to the Apparel and Merchandising and Interior Design majors, career options, campus resources, tools for academics, and industry topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DM 272 Consumers in the Marketplace Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of consumers in the marketplace as applied to merchandising.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 360 Retailing Credits: 3 (3-0-0)
Also Offered As: MKT 360.
Course Description: Retail markets, institutions, operations, and problems.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit not allowed for both DM 360 and MKT 360. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 400 U.S. Travel-New York City Credits: 3 (1-2-1)
Course Description: Interview/analyze designers, manufacturers, buying offices, retail stores, magazine firms, interior design and architecture firms, etc.
Prerequisite: None.
Registration Information: Must have taken 6 credits in the following courses: DM, AM, INTD. Must register for lecture, laboratory, and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 470A International Design and Merchandising: Apparel Credits: 2 (1-0-1)
Course Description: Historical, cultural, and business aspects of international design and merchandising in selected countries.
Prerequisite: AM 101 and AM 130 and DM 120 and DM 482A, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 482A. Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 470B International Design and Merchandising: Interior Design Credits: 2 (1-0-1)
Course Description: Historical, cultural, and business aspects of international design and merchandising in selected countries.
Prerequisite: ART 100 and INTD 129 and INTD 166 and DM 482B, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 482B. Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 474 Fashion Show Production and Event Planning Credits: 3 (1-0-2)
Course Description: Planning and implementing full production fashion show of student-designed collections, including promotions and fundraising activities.
Prerequisite: AM 101 or INTD 129.
Registration Information: Written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

DM 482 Travel Abroad Credit: 1 (0-0-1)
Course Description: Historical, cultural, aesthetic, and business aspects of design and merchandising in the selected country(ies).
Prerequisite: AM 101 and AM 130 and DM 120 and DM 470A, may be taken concurrently.
Registration Information: Must have concurrent registration in DM 470A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 487A Internship: Merchandising Credits: Var[12-16] (0-0-0)
Course Description: AM 371 and (DM 360 or MKT 360) and (DM 492).
Registration Information: GPA 2.50.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
DM 487B Internship: Apparel Design and Production  Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: AM 244 and DM 492.
Registration Information: GPA 2.50.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487C Internship: Product Development  Credits: Var[12-16] (0-0-0)
Course Description:
Prerequisite: AM 375 and DM 492.
Registration Information: GPA 2.50.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 487F Internship: General  Credits: Var[3-16] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor; GPA2.500.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490A Workshop: Merchandising  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490B Workshop: Apparel Design and Production  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 490C Workshop: Interior Design  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 492 Preinternship Seminar  Credits: 2 (1-0-1)
Course Description: Professional standards and corporate structure of apparel and merchandising companies in apparel design, product development, and/or merchandising.
Prerequisite: None.
Registration Information: Minimum 2.5 GPA; minimum of 60 credits completed. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 495 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 496 Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of three credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 501 Research and Theory-Design and Merchandising  Credits: 3 (0-0-3)
Course Description: Theory and various approaches and philosophies of research in design and merchandising. Critical evaluation and synthesis of scholarly literature.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 510 Consumer Behavior  Credits: 3 (3-0-0)
Course Description: Evaluation of psychological, sociological, and cultural theories of consumer behavior through examination of factors that influence decision making.
Prerequisite: None.
Terms Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 518 Consumer Issues-Global Perspectives  Credits: 3 (3-0-0)
Course Description: Understanding and analysis of consumer well-being and issues from global perspective.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

DM 540 Promotional Strategies in Merchandising  Credits: 3 (3-0-0)
Course Description: Integrated marketing communications while fostering cultural and global awareness, social responsibility and ethical decision-making.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

DM 542 Advanced Computer-Aided Textile Design  Credits: 3 (1-4-0)
Course Description: Use of computer-aided design system to produce fabric designs for apparel or interior professional end use.
Prerequisite: AM 342.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

DM 551 Research Methods  Credits: 3 (3-0-0)
Course Description: Design and methods of research applicable to design and merchandising.
Prerequisite: None.
Registration Information: DM 501 or permission of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
DM 563 Care and Exhibit of Museum Collections Credits: 3 (1-2-1)
Course Description: Hands-on experience in management, care, exhibition, and interpretation of museum collections.
Prerequisite: ART 100 to 499 - at least 3 credits or HIST 100 to 499 - at least 3 credits or AM 100 to 499 - at least 3 credits or DM 100 to 499.
Registration Information: Must register for lecture, laboratory and recitation. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 570 Creativity in Design Credits: 3 (0-0-3)
Course Description: Multiple perspectives in creativity integrating theory and research impacting design.
Prerequisite: DM 501.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 575 Human Factors in Design--Softlines Credits: 3 (3-0-0)
Course Description: Theories and contemporary issues related to human factors in design with a specific focus on interior, apparel, and footwear products.
Prerequisite: DM 501, may be taken concurrently.
Registration Information: DM 501 or concurrent registration.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

DM 578 Trends-Consumer Issues Credits: 3 (2-0-1)
Course Description: Development and projections of consumer issues.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

DM 590A Workshop: Merchandising Credits: Var[1-6] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590B Workshop: Apparel Design and Production Credits: Var[1-6] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 590C Workshop: Interior Design Credits: Var[1-6] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 596 Group Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 684 Supervised College Teaching Credits: Var[1-6] (0-0-0)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 687 Internship Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

DM 698 Research Credits: 3 (0-0-3)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

DM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ECOL 571  Advanced Topics in Ecology  Credits: Var[1-3] (0-0-0)
Course Description: Current research topics presented and analyzed by visiting scientists.
Prerequisite: None.
Registration Information: One course in ecological principles.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 592  Interdisciplinary Seminar in Ecology  Credits: Var[1-3] (0-0-0)
Course Description: Concepts and principles of basic and applied ecology in an interdisciplinary context.
Prerequisite: None.
Registration Information: One 300- or 400-level course in ecology.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 600  Community Ecology  Credits: 3 (2-0-1)
Course Description: Current theories and tests of the dynamics and regulation of plant and animal communities.
Prerequisite: (STAT 100 to 499 - at least 1 course) and (MATH 141 or MATH 155 to 161 - at least 1 course or MATH 255 to 261 - at least 1 course) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 610  Ecosystem Ecology  Credits: 3 (3-0-0)
Course Description: Concepts, methods, issues in ecosystem science: energy and matter cycling; systems perspectives, simulation modeling, sustainability, global change.
Prerequisite: LIFE 320 or ECOL 000 to 9999 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 620  Applications in Landscape Ecology  Credits: 4 (2-2-1)
Course Description: Spatial patterning of landscape elements and dynamics of ecological systems; spatial heterogeneity. Influence on biotic and abiotic processes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation. Previous coursework in geographic information systems, ecology, statistics, and mathematics.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECOL 693  Research Seminar  Credit: 1 (0-0-1)
Course Description: Critique of research programs, plans, and ecological theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECOL 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 698  Research  Credits: Var[1-18] (0-0-0)
Course Description: Non-thesis research in ecology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECOL 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Economics-ECON (ECON)
Courses
ECON 101  Economics of Social Issues (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Economic analysis of poverty, crime, education, and other social issues. Basics of micro, macro, and political economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 202  Principles of Microeconomics (GT-SS1)  Credits: 3 (2-0-1)
Course Description: Introduction to decision-making by households, firms, and government, and resulting allocation of resources through markets.
Prerequisite: MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Must register for lecture and recitation. Credit not allowed for both ECON 202 and AREC 202. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).
ECON 204 Principles of Macroeconomics (GT-SS1) Credits: 3 (2-0-1)
Course Description: Determinants of national output, employment, and price level; inflation and unemployment; fiscal and monetary policy.
Prerequisite: (MATH 117 or MATH 118 or MATH 141 or MATH 155 or MATH 160) and (ECON 202 or AREC 202).
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 204 Issues in Environmental Economics (GT-SS1) Credits: 3 (3-0-0)
Also Offered As: AREC 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both ECON 240 and AREC 240. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 211 Gender in the Economy (GT-SS1) Credits: 3 (3-0-0)
Course Description: Role gender plays in economies; the way gender affects economic outcomes for individuals and societies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 212 Racial Inequality and Discrimination (GT-SS1) Credits: 3 (3-0-0)
Course Description: Economic inequality between Afro-Americans and Euro-Americans. Debates about causes, consequences, and remedies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

ECON 217 Population Economics Credits: 3 (3-0-0)
Course Description: Economics analysis of population issues.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 221 Economic Analysis of Law Credits: 3 (3-0-0)
Course Description: Economic analysis of the common law.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 302 Economics of Public Finance Credits: 3 (3-0-0)
Course Description: Impact of taxes, government expenditures on allocation of resources, distribution of income; evaluation of government expenditure program, tax policies.
Prerequisite: ECON 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 304 Intermediate Macroeconomics Credits: 3 (3-0-0)
Course Description: Theory of national income, its measurement and determinants; analysis of inflation, growth, debt, and public policy.
Prerequisite: (ECON 204) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 306 Intermediate Microeconomics Credits: 3 (3-0-0)
Course Description: Analysis of competitive and noncompetitive markets in terms of efficiency of resource utilization.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 310 Poverty and the Welfare State Credits: 3 (3-0-0)
Course Description: Description and analysis of US poverty; the "underclass"; feminization of poverty; working poor; the welfare state.
Prerequisite: AREC 202 or ECON 101 or ECON 202.
Terms Offered: Spring, Summer (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 315 Money and Banking Credits: 3 (3-0-0)
Course Description: Monetary theory and policy; description of financial institutions and markets.
Prerequisite: ECON 204.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 317 Population Economics Credits: 3 (3-0-0)
Course Description: Economics analysis of population issues.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 320 Health Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of health care markets, health insurance markets, and public policy regarding health care.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 322 Law and Economics Credits: 3 (3-0-0)
Course Description: Economic analysis of the common law.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 332  International Political Economy  Credits: 3 (3-0-0)
Also Offered As: POLS 332.
Course Description: Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite: (ECON 202 or AREC 202) and (POLS 232).
Registration Information: Credit not allowed for both ECON 332 and POLS 332.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 335  Introduction to Econometrics  Credits: 3 (3-0-0)
Also Offered As: AREC 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (STAT 201 or STAT 204 or STAT 301) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 340  Introduction to Economics of Natural Resources  Credits: 3 (3-0-0)
Also Offered As: AREC 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Credit not allowed for both ECON 340 and AREC 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 344  Economics of Energy Resources  Credits: 3 (3-0-0)
Course Description: Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 346  Economics of Outdoor Recreation  Credits: 3 (3-0-0)
Also Offered As: AREC 346.
Course Description: Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.
Prerequisite: ECON 202 or AREC 202.
Registration Information: Credit not allowed for both ECON 346 and AREC 346.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 370  Comparative Economic Systems  Credits: 3 (3-0-0)
Course Description: Place of the economy in different societies; nature and evolution of capitalism; crisis of command economies and capitalist restoration.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 372  History of Economic Institutions and Thought  Credits: 3 (3-0-0)
Course Description: Origins and development of capitalist institutions including contemporary issues of alienation, loss of community, and changing values.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 376  Marxist Economic Thought  Credits: 3 (3-0-0)
Course Description: Marxist critique of capitalism and orthodox economics in both its original 19th century and contemporary settings.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 379  Economic History of the United States  Credits: 3 (3-0-0)
Also Offered As: HIST 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: ECON 101 or ECON 202 or AREC 202 or any 2 courses in American history. Credit not allowed for both ECON 379 and HIST 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.

ECON 404  Macroeconomic Policy  Credits: 3 (3-0-0)
Course Description: Alternative macroeconomic policies, policy coordination; application to current macroeconomic problems, policies, proposals.
Prerequisite: ECON 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 410  Labor Economics  Credits: 3 (3-0-0)
Course Description: Capital/labor relationship; supply, demand of labor; wage determination; role of unions; unemployment and instability; structure of modern working class.
Prerequisite: ECON 306.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 435  Economic Forecasting  Credits: 3 (3-0-0)
Course Description: Theory and techniques used in economic forecasting as practiced by economists in industry, government, and academic life.
Prerequisite: (ECON 204) and (ECON 335 or AREC 335 or STAT 340).
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 440 Economics of International Trade and Policy Credits: 3 (3-0-0)
Course Description: Theory of international trade; payments, commercial policies, and economic integration.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 442 Economics of International Finance and Policy Credits: 3 (3-0-0)
Course Description: Balance of payments, adjustment mechanisms, and international monetary systems.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 460 Economic Development Credits: 3 (3-0-0)
Course Description: Economic problems of underdeveloped nations.
Prerequisite: ECON 304.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 463 Regional Economics Credits: 3 (3-0-0)
Course Description: Introduction to economic importance of location for firms, consumers, and policy makers. Basic tools, applications, and student research.
Prerequisite: ECON 306.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 474 Recent Economic Thought Credits: 3 (3-0-0)
Course Description: Nontraditional schools of economic thought, such as institutionalism and neo-Marxism, that critique neoclassical economic theory.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assistance in teaching introductory economics courses.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 492 Seminar Credits: 3 (0-0-3)
Course Description: Summarizes, discusses, and applies issues and policies chosen by the instructor. Emphasis on student participation, discussion, and research.
Prerequisite: (AREC 335, may be taken concurrently or ECON 335, may be taken concurrently) and (ECON 304, may be taken concurrently and ECON 306, may be taken concurrently).
Restriction: Credit not allowed for both ECON 506 and AREC 506.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 501 Quantitative Methods for Economists Credits: 3 (3-0-0)
Course Description: Application of macroeconomic models to economic growth, economic fluctuations, and policy analysis.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 504 Applied Macroeconomics Credits: 3 (3-0-0)
Course Description: Application of macroeconomic models to economic growth, economic fluctuations, and policy analysis.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 505 History of Economic Thought Credits: 3 (3-0-0)
Course Description: History of economic thought as a foundation for studying economic theory.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 506 Applied Microeconomic Theory Credits: 3 (3-0-0)
Also Offered As: AREC 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 304.
Registration Information: Credit not allowed for both ECON 506 and AREC 506.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 510 Labor Market Analysis Credits: 3 (3-0-0)
Course Description: Determination of wages and employment. Focus on theoretical and applied controversies.
Prerequisite: ECON 304.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 515 Financial Institutions-Structure/Regulation Credits: 3 (3-0-0)
Course Description: Regulation of financial institutions in the U.S.; international banking and international financial institutions, and financial modernization.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 520 Public Economics I Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of tax policy in terms of efficiency and equity.
Prerequisite: ECON 506 or AREC 506 or ECON 606 or AREC 606.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 530 Methodology of Economic Research Credits: 3 (3-0-0)
Also Offered As: AREC 570.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both ECON 530 and AREC 570.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 535 Applied Econometrics Credits: 3 (3-0-0)
Also Offered As: AREC 535.
Course Description: Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.
Prerequisite: (ECON 335 or AREC 335) and (ECON 304 or ECON 306).
Registration Information: Credit not allowed for both ECON 535 and AREC 570.
Term Offered: Spring.
Grade Modes: Traditional.
Special Course Fee: No.

ECON 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)
Also Offered As: AREC 540.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 540 and AREC 540.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 541 Environmental Economics Credits: 3 (3-0-0)
Also Offered As: AREC 541.
Course Description: Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both ECON 541 and AREC 541.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 550 Regional Economics-Theory, Methods, and Issues Credits: 3 (3-0-0)
Also Offered As: AREC 550.
Course Description: Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.
Prerequisite: ECON 306 and ECON 501, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 563 and AREC 563.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 570 Evolution of Economic Thought Credits: 3 (3-0-0)
Course Description: From Plato and Aristotle to the modern period.
Prerequisite: ECON 304 and ECON 306.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 604 Macroeconomic Analysis I Credits: 3 (3-0-0)
Course Description: Theoretical and empirical analysis of short-run and long-run macroeconomic performance across countries using dynamic models.
Prerequisite: ECON 304 and ECON 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 606 Microeconomic Analysis I Credits: 3 (3-0-0)
Also Offered As: AREC 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 306 and ECON 501.
Registration Information: Credit not allowed for both ECON 606 and AREC 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 635 Econometric Theory I Credits: 3 (3-0-0)
Also Offered As: AREC 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 635 and AREC 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 640 International Trade Theory Credits: 3 (3-0-0)
Course Description: Theory of international trade including comparative advantage, factor growth, market distortions, and commercial policy.
Prerequisite: ECON 306 or ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 663 Urban and Regional Modeling  Credits: 3 (3-0-0)
Course Description: Methodological approaches in regional economics: general equilibrium, input-output, computable general equilibrium models; social accounting matrices.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 695 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 698 Research--Technical Paper  Credits: 3 (0-0-3)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 704 Macroeconomic Analysis II  Credits: 3 (3-0-0)
Course Description: Theoretical and empirical frameworks for analyzing macroeconomic policies and their impact on economic growth, employment, and income distribution.
Prerequisite: ECON 604.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 705 Heterodox Approaches to Economics  Credits: 3 (3-0-0)
Course Description: Contemporary heterodox approaches to economic research.
Prerequisite: ECON 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 706 Microeconomic Analysis II  Credits: 3 (3-0-0)
Also Offered As: AREC 706.
Course Description: Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.
Prerequisite: ECON 606.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 706 and AREC 706.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 715 Monetary Economics  Credits: 3 (3-0-0)
Course Description: Principle issues of monetary theory: money supply and demand, interest rates, and current problems of monetary policy.
Prerequisite: ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 720 Public Economics II  Credits: 3 (3-0-0)
Course Description: Analysis of welfare foundations of public expenditure, including cost-benefit analysis.
Prerequisite: ECON 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ECON 735 Econometric Theory II  Credits: 2 (2-0-0)
Also Offered As: AREC 735.
Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.
Prerequisite: AREC 635 or ECON 635.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 735 and AREC 735. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECON 736A Advanced Econometric Methods: Discrete Choice Models  Credit: 1 (1-0-0)
Also Offered As: AREC 736A.
Course Description: Econometrics analysis of: Discrete Choice Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 736B  Advanced Econometric Methods: Panel Data Models  Credit: 1 (1-0-0)
Also Offered As: AREC 736B.
Course Description: Econometrics analysis of: Panel Data Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 736C  Advanced Econometric Methods: Time Series Models  Credit: 1 (1-0-0)
Also Offered As: AREC 736C.
Course Description: Econometrics analysis of: Time Series Models.
Prerequisite: AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.
Registration Information: Credit not allowed for both ECON 736A-C and AREC 736A-C. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 740  Advanced Natural Resource Economics  Credits: 3 (3-0-0)
Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.
Prerequisite: AREC 706 or AREC 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 740 and AREC 740.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 741  Advanced Environmental Economics  Credits: 3 (3-0-0)
Also Offered As: AREC 741.
Course Description: Advanced theory, methods, and literature in environmental economics.
Prerequisite: AREC 706 or ECON 706.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECON 741 and AREC 741.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 742  International Production and Monetary Theory  Credits: 3 (3-0-0)
Course Description: Factor movements, theory of international production (multinationalism), balance of payments, and international monetary system.
Prerequisite: ECON 304 or ECON 504.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 760  Theories of Economic Development  Credits: 3 (3-0-0)
Course Description: Analysis of fundamentals of economic development (processes, problems, and strategies) with special reference to developing nations.
Prerequisite: ECON 460.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 770  Economic Thought and Systems  Credits: 3 (3-0-0)
Course Description: Aspects of modern economic thought and comparative economics selected according to backgrounds and interests of the class.
Prerequisite: ECON 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
ECON 771  Political Economy of Race and Gender  Credits: 3 (3-0-0)
Course Description: Economic approaches to inequality based on race/ethnicity, gender, and class.
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 772  Marxian Political Economy  Credits: 3 (3-0-0)
Course Description: Marxian method, relevance of Marxian approach, and relation to other economic approaches.
Prerequisite: ECON 505.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECON 784  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ECON 792A  Seminar: Theory  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ECON 792C  Seminar: Social and Political  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ECON 792D Seminar: Quantitative Analysis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792E Seminar: Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 792F Seminar--Doctoral Research Credits: 3 (0-0-3)
Course Description:
Prerequisite: (ECON 704 and ECON 705 and ECON 706) and (ECON 735 or AREC 735).
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECON 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 130 System Theory and Information Management Credit: 1 (0-2-0)
Course Description: Applying computers, networks, software applications, and the internet for managing information in ecosystem science and sustainability.
Prerequisite: AGRI 140 or BUS 150 or CS 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 211 Foundations in Ecosystem Science Credits: 3 (3-0-0)
Course Description: Linkage between society and ecosystems services as foundation for sustainability of the coupled human-environmental system.
Prerequisite: GR 210 or ESS 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 220 Research Skills for Ecosystem Science I Credit: 1 (0-0-1)
Course Description: Fundamental skills for participating in ecosystem science research through hands-on learning modules.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 221 Research Methods for Ecosystem Science II Credit: 1 (0-0-1)
Course Description: Advanced topics in the practice of the scientific method and participation in research.
Prerequisite: ESS 220.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 298 Research Credits: Var[1-3] (0-0-0)
Course Description: Directed ecosystem science research.
Prerequisite: ESS 221, may be taken concurrently.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 311 Ecosystem Ecology Credits: 3 (3-0-0)
Course Description: Principles of ecosystems ecology, emphasis on their application to coupled natural and human systems.
Prerequisite: ESS 211.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 330 Quantitative Reasoning for Ecosystem Science Credits: 3 (2-2-0)
Course Description: Understanding diverse approaches for using data and models to understand complex ecological systems.
Prerequisite: (ESS 211 or LIFE 320) and (MATH 155 or MATH 160) and (STAT 301 or STAT 307 or STAT 315).
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 400 Sustainability and Ecosystem Science Credits: 3 (2-0-1)
Course Description: Integrates ecosystems services and sustainability strategies, application to coupled natural and human systems.
Prerequisite: ESS 311 and ESS 330
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
ESS 411 Earth Systems Ecology  Credits: 3 (2-2-0)
Course Description: Earth as a system, stressing ecological interactions among energy, water, and biogeochemistry.
Prerequisite: ESS 311.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 440 Practicing Sustainability  Credits: 4 (2-0-2)
Course Description: Capstone integration of ecosystem science and sustainability, focused on case studies.
Prerequisite: ESS 311 and ESS 330.
Registration Information: Senior standing in WCNR. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ESS 486 Ecosystem Practicum  Credits: 2 (0-0-2)
Course Description: One-week field practicum to examine ecosystem science and sustainability issues in Colorado landscapes.
Prerequisite: ESS 211 and NR 220.
Registration Information: Senior standing. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 487 Internship  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 495 Independent Study in Ecosystem Science  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: None.
Registration Information: Senior standing. Required field trips.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ESS 501 Principles of Ecosystem Sustainability  Credits: 3 (3-0-0)
Course Description: Principles of ecosystem sustainability and threats to sustainability. Students will investigate and develop case studies.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Admission to graduate school. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 524 Foundations for Carbon/Greenhouse Gas Mgmt  Credits: 3 (3-0-0)
Course Description: Foundations for understanding greenhouse gas emissions management and accounting.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 525 Greenhouse Gas Policies  Credits: 2 (0-0-2)
Course Description: Rules, regulations and standards for greenhouse gas management and accounting.
Prerequisite: ESS 524.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 543 Current Topics in Climate Change  Credits: 2 (2-0-0)
Also Offered As: ATS 543.
Course Description: Climate fundamentals and current topics in climate change.
Prerequisite: BZ 300 to 499 or ECOL 300 to 499 or LIFE 300 to 499 or CHEM 300 to 499.
Registration Information: Credit not allowed for both ESS 543 and ATS 543.<Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ESS 545 Applications in Greenhouse Gas Inventories  Credits: 4 (2-6-0)
Course Description: Overview of methods for estimating greenhouse gas emissions and mitigation potential for agriculture and forestry activities.
Prerequisite: ESS 524.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 565 Niche Models  Credits: 4 (3-2-0)
Course Description: Concepts and application of niche models in ecosystem science.
Prerequisite: (BSPM 526 or BZ 526 or BZ 535 or BZ 548 or BZ 561 or ECOL 505 or ECOL 600 or ECOL 610 or ECOL 620 or FW 555 or FW 662) and (STAT 511).
Registration Information: STAT 511 or written consent of instructor. Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ESS 575 Models for Ecological Data  Credits: 4 (3-2-0)
Course Description: Gaining insight about the operation of ecological processes using models and data.
Prerequisite: MATH 255 and STAT 340.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ESS 587 Internship  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in professional settings related to Ecosystem Science and Sustainability.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
ESS 625 Ecology of Forest Production Credits: 3 (3-0-0)
Also Offered As: F 625.
Course Description: Develops student expertise in understanding carbon
and nutrient flows in forests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken a 300-level course in ECOL.
Credit not allowed for both ESS 625 and F 625. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ESS 655 Multivariate Analysis for Community Ecology Credits: 2 (2-0-0)
Course Description: Techniques and conceptual understanding for
analyzing multivariate ecological data characteristic of community
ecology, including ordination, classification, and permanova.
Prerequisite: (STAT 511) and (BZ 500 to 679 - at least 3 credits or ECOL
500 to 679 - at least 3 credits or ESS 500 to 679 - at least 3 credits or FW
500 to 679 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ESS 660 Biogeochemical Cycling in Ecosystems Credits: 3 (3-0-0)
Course Description: Biotic and abiotic processes responsible for
distribution and fluxes of elements at ecosystem, landscape, and global
scales.
Prerequisite: CHEM 245 and SOCR 240 and ECOL 300 to 699.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ESS 692 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
ESS 695 Independent Study in Ecosystem Science Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ESS 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ESS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ESS 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ESS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Educ-Cnsling/Career Dev-EDCO (EDCO)

Courses
EDCO 500 Career and Employment Concepts Credits: 3 (0-0-3)
Course Description: Career and lifestyle studies that provide an
understanding of career development, employment concepts, and career
counseling resources.
Prerequisite: None.
Registration Information: Bachelor's degree. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDCO 550 Professional School Counseling Credits: 3 (3-0-0)
Course Description: History, professionalism, ethics, program planning
and program development of school counseling programs.
Prerequisite: None.
Registration Information: Admission to Counseling and Career
Development Program or approval of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
EDCO 552 School Counseling Program Delivery/Evaluation Credits: 3 (0-0-3)
Course Description: Effective school counseling program development,
delivery, and evaluation.
Prerequisite: EDCO 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDCO 590 Workshop  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 625 Foundations of Counseling  Credits: 3 (2-0-1)
Course Description: Foundations and techniques of individual guidance and counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 650 Individual Guidance and Counseling  Credits: 3 (2-0-1)
Course Description: Theories of individual counseling and development.
Prerequisite: EDCO 625.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 651 Group Guidance and Counseling  Credits: 3 (2-0-1)
Course Description: Theory and techniques of group guidance and counseling.
Prerequisite: EDCO 650.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 652 Ethics in Counseling/Career Development  Credits: 3 (3-0-0)
Course Description: Awareness and critical analysis of ethical and legal issues in counseling and career development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 653 Counseling for Cultural Diversity  Credits: 3 (2-0-1)
Course Description: Influence of cultural differences in delivering culturally responsive counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the M.Ed. Counseling and Career Development specialization or written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 656 Tests and Assessment  Credits: 3 (1-0-2)
Course Description: Use of tests in educational, vocational, and counseling assessment.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

EDCO 660 Career Development Counseling  Credits: 3 (3-0-0)
Course Description: Career development programs and processes over the life span with particular attention to career choice.
Prerequisite: EDCO 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 662 Counseling Children and Adolescents  Credits: 3 (2-0-1)
Course Description: Counseling theories and interventions applied to the child and adolescent client population.
Prerequisite: None.
Registration Information: Admission to Counseling and Career Development Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 666 Practicum-Guidance and Counseling  Credits: Var[1-18] (0-0-0)
Course Description: Blends theory of brief counseling with practice. Individualized for application in the student's counseling setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 687 Internship-Guidance and Counseling  Credits: Var[1-18] (0-0-0)
Course Description: Blends theory of brief counseling with practice. Individualized for application in the student's counseling setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCO 692 Seminar-Brief Counseling  Credits: 3 (1-0-2)
Course Description: Blends theory of brief counseling with practice. Individualized for application in the student's counseling setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Proof of professional counseling liability insurance.
Term Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCO 693 Seminar-Guidance and Counseling  Credits: Var[1-18] (0-0-0)
Course Description: Blends theory of brief counseling with practice. Individualized for application in the student's counseling setting.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDCO 696  Group Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

EDCO 792A Seminar: Individual Counseling  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

EDCO 792B Seminar: Group Counseling  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

EDCO 792C Seminar: Contemplative Practices in Counseling and Education  Credits: 3 (0-0-3)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

EDAE 495 Independent Study-Adult Education  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

EDAE 520 Adult Education  Credits: 3 (0-0-3)  
Course Description: Philosophical foundations, a description of program service areas, adult participation trends, and current issues.  
Prerequisite: None.  
Registration Information: Sections may be offered: Online.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

EDAE 530 Adult Basic Education  Credits: 3 (2-0-1)  
Course Description: Enhance instructor skills in literacy and numeracy instruction for adult learners functioning below the 12th grade equivalency.  
Prerequisite: None.  
Registration Information: Bachelor’s degree or consent of instructor. Offered as an online course only.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

EDAE 540 Teach English as Second Lang—Adult Learners  Credits: 3 (2-0-1)  
Course Description: Instructors learn the tools necessary to successfully deliver English learning to adult speakers of other languages.  
Prerequisite: None.  
Registration Information: Bachelor’s degree or consent of instructor. Offered only online  
Terms Offered: Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

EDAE 586 Practicum  Credits: Var[1-18] (0-0-0)  
Course Description: Participation in field experience relevant to study program and objectives.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

EDAE 601 Philosophy/Organization of Workforce Education  Credits: 3 (3-0-0)  
Course Description: Principles, philosophy, practices, and innovations of workforce education and human resources.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Sections may be offered: Online.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

EDAE 620 Processes and Methods  Credits: 3 (0-0-3)  
Course Description: Processes and methods including helping theories used by adult learning facilitators.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Sections may be offered: Online.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

EDAE 624 Adult Teaching and Learning I  Credits: 3 (0-0-3)  
Course Description: Using theory and best practices to design and deliver instruction for adults.  
Prerequisite: EDAE 520.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Sections may be offered: Online.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDAE 629</td>
<td>Program Development</td>
<td>3</td>
<td>Models for planning, implementing, and evaluating programs for adult learners.</td>
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<td>Prerequisite: None</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Registration Information: Sections may be offered: Online</td>
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<td>Term Offered: Spring</td>
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<td>Grade Mode: Traditional</td>
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<td>Special Course Fee: No</td>
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<tr>
<td>EDAE 639</td>
<td>Instructional Design</td>
<td>3</td>
<td>Apply instructional design principles in the development of a course or workshop and explore application of various learning methods.</td>
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<td>Prerequisite: None</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.</td>
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<td>Term Offered: Fall</td>
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<td>Grade Mode: Traditional</td>
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<td>Special Course Fee: No</td>
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<tr>
<td>EDAE 664</td>
<td>Assessment and Evaluation in Adult Education</td>
<td>3</td>
<td>Assessment of learning, evaluation of learning events, and determining the value of the training to the adult learners in the organization.</td>
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<td>Prerequisite: EDAE 620</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Registration Information: Sections may be offered: Online</td>
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<td>Term Offered: Fall</td>
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<td>Grade Mode: Traditional</td>
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<td>Special Course Fee: No</td>
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<td>EDAE 668</td>
<td>Cognitive Theory and Learning Transfer</td>
<td>3</td>
<td>Investigation of learning processes and training strategies that lead to application of learning outside of the classroom.</td>
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<td>Prerequisite: EDAE 620 or EDAE 624</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Registration Information: EDAE 620; EDAE 624 or written consent of instructor. Sections may be offered: Online.</td>
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<td>Term Offered: Fall</td>
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<td>Grade Mode: Traditional</td>
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<td>Special Course Fee: No</td>
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<tr>
<td>EDAE 682</td>
<td>Cultural Applications of Lifelong Learning</td>
<td>3</td>
<td>Immersion experience examining cultural differences and establishing lifelong learning practices in Belize.</td>
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<td>Prerequisite: EDUC 651</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td></td>
<td>Registration Information: Have completed 6 credits in the Adult Education and Training specialization under the M.Ed.</td>
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<td>Term Offered: Summer</td>
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<td>Grade Mode: Traditional</td>
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<td>Special Course Fee: No</td>
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<tr>
<td>EDAE 687</td>
<td>Internship</td>
<td>Var[1-18]</td>
<td>Career or job fieldwork experience with an adult education institution, agency, or program.</td>
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<td>Prerequisite: None</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Terms Offered: Fall</td>
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<td>Grade Mode: Instructor Option</td>
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<td>EDAE 692</td>
<td>Seminar-Adult Education</td>
<td>Var[1-18]</td>
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<td>Prerequisite: None</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Term Offered: Fall</td>
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<td>Grade Mode: Instructor Option</td>
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<td>Special Course Fee: No</td>
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<td>EDAE 695</td>
<td>Independent Study</td>
<td>Var[1-18]</td>
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<td>Prerequisite: None</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Grade Mode: Instructor Option</td>
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<td>EDAE 698</td>
<td>Research</td>
<td>Var[1-18]</td>
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<td>Prerequisite: EDAE 520 and EDAE 624 and EDRM 600</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Grade Mode: Instructor Option</td>
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<td>Special Course Fee: No</td>
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<tr>
<td>EDAE 699</td>
<td>Thesis</td>
<td>Var[1-18]</td>
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<td>Prerequisite: EDAE 520 and EDAE 624 and EDRM 600</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Term Offered: Fall</td>
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<td>Grade Mode: Instructor Option</td>
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<td>EDAE 724</td>
<td>Adult Teaching and Learning II</td>
<td>3</td>
<td>Adult teaching and learning, alternative delivery systems, performance technology, and faculty evaluation.</td>
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<td>Prerequisite: None</td>
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<td>Restriction: Must be a: Graduate, Professional</td>
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<td>Term Offered: Fall</td>
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<td>Grade Mode: Traditional</td>
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<tr>
<td>Education-Career + Tech-EDCT (EDCT)</td>
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<tr>
<td>EDC 300</td>
<td>Principles of Career and Technical Education</td>
<td>2</td>
<td>History, purpose, administration, funding, programs, services and delivery of career and technical education within educational systems.</td>
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<td>Prerequisite: None</td>
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<td>Registration Information: Offered as an online course only.</td>
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<td>Term Offered: Fall</td>
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<td>Grade Mode: Traditional</td>
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<td>Special Course Fee: No</td>
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</tbody>
</table>
EDCT 370 Laboratory Management, Safety, and Liability Credits: 3 (3-0-0)
Course Description: Organization and management of learning laboratories. Approved principles and practices of classroom and laboratory safety including impact of accidents.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 387 Internship Credits: Var[1-18] (0-0-0)
Course Description: Coordinated and supervised experiences in business, industry, or agriculture selected to strengthen the intern’s specialty through experience.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 400 Building Student Organizations/Partnerships Credits: 2 (2-0-0)
Course Description: Techniques and methods to implement and advise student leaders; establish and nurture business/industry partners and work-based experiences.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 403 Coordination Techniques of Cooperative Programs Credits: 2 (0-0-2)
Course Description: Techniques and methods employed in organization, development, and maintenance of a cooperative program.
Prerequisite: None.
Registration Information: Offered as online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 420 Agricultural Experience and Adult Education Credits: 3 (3-0-0)
Course Description: Developing secondary agriculture experience programs. Organizing and teaching adult education classes in agriculture.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 425 Methods/Materials in Agricultural Education Credits: 4 (4-0-0)
Course Description: Methods and procedures in teaching and evaluating agricultural education in the classroom and laboratory; vocational foundations; microteaching.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 431 Methods/Materials in Business Education Credits: 4 (4-0-0)
Course Description: Methods for teaching business education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 441 Methods/Materials-Vocational Marketing Education Credit: 1 (1-0-0)
Course Description: Instructional methods and resource materials development for vocational marketing education.
Prerequisite: (EDCT 431) and (EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 451 Methods-Family/Consumer Sciences Education Credits: 4 (3-2-0)
Course Description: Teaching methods, processes, and materials for family and consumer sciences education.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 465 Methods and Materials in Technology Education Credits: 3 (3-0-0)
Course Description: Strategies and practices of teaching in a technical laboratory setting.
Prerequisite: EDUC 350, may be taken concurrently or EDUC 450, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 471 Orientation and Assessment of New Teachers Credits: 2 (2-0-0)
Course Description: Orientation to teaching and individual assessment of teaching skills: development and implementation of professional growth plan.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 472 Classroom Management Credit: 1 (0-0-1)
Course Description: Orientation to teaching and individual assessment of teaching skills: development and implementation of professional growth plan.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 473 Communication Strategies Credit: 1 (0-0-1)
Course Description: Introduction to student management techniques and program management. Teachers will create a preliminary plan for instruction.
Prerequisite: EDCT 471.
Registration Information: Admission to TAP. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 485 Student Teaching Credits: Var[1-18] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special content methods courses.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDCT 486 Practicum Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 492 Seminar-Professional Relations Credits: Var[1-18] (0-0-0)
Course Description: Collegial and professional discussions, support, and assistance.
Prerequisite: EDUC 450.
Registration Information: Appropriate special content methods course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDCT 494 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 520 Teaching Agricultural Education Credits: Var[1-18] (0-0-0)
Course Description: Methods of teaching recent developments in the field of agriculture and allied industries.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 571 Vocational Assessment for Special Needs Credits: 3 (0-0-3)
Course Description: Information on techniques regarding vocational assessment of special needs students including traditional and curriculum-based strategies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 590 Workshop Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCT 612 Career and Technical Administrative Strategy Credits: 3 (0-0-3)
Course Description: Basic educational systems; the scientific method as a basis for analysis; systems as a tool for planning and decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 630 Organization of Business Education Credits: 2 (2-0-0)
Course Description: Procedures for organizing new programs and for managing or modifying existing programs.
Prerequisite: EDCT 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 631 Management of Business Departments Credits: 2 (2-0-0)
Course Description: Preparation of teachers and administrators for implementation of vocational business and office education programs.
Prerequisite: EDCT 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 640 Methods in Marketing Education Credits: 2 (2-0-0)
Course Description: Instruction and curricula for secondary and postsecondary vocational marketing education.
Prerequisite: EDCT 441.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDCT 641 Programs in Marketing Education Credits: 2 (2-0-0)
Course Description: Techniques used in determining need for and implementations of new or additional programs of vocational marketing education.
Prerequisite: EDCT 441.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDCT 693 Seminar Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education-Community Coll-EDCL (EDCL)

Courses

EDCL 675 The Community College Credits: 3 (3-0-0)
Course Description: Role and scope of community college: history, philosophy, organization, administration.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDCL 702.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 687 Internship Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDCL 701 Higher Education Law Credits: 3 (0-0-3)
Course Description: Legal theory, analysis, and review of cases relevant to higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 702 Community College Curriculum Credits: 3 (2-0-1)
Course Description: Investigation and research of critical curricular issues affecting the community college now and in the future.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDCL 675. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 703 Community College Leadership Credits: 3 (2-0-1)
Course Description: Investigation and research of critical leadership issues affecting the community college now and in the future.
Prerequisite: EDCL 675.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDCL 792 Seminar Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education-General-EDUC (EDUC)

Courses

EDUC 255 Introduction to Education Credits: 2 (2-0-0)
Course Description: Overview of teaching profession emphasizing teaching opportunities, licensure, and University professional program.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 275 Schooling in the United States (GT-SS3) Credits: 3 (3-0-0)
Course Description: Social, political, historical, and economic forces that shape U.S. system of public schooling (P-12).
Prerequisite: None.
Registration Information: 30 credits of course work completed. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 792 Seminar Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDUC 296 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 320 Educational Psychology Credits: 3 (0-0-3)
Course Description: Psychological conditions of classroom learning and teaching including understanding needs of exceptional children in the classroom.
Prerequisite: None.
Registration Information: Offered as an online or correspondence course only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 331 Educational Technology and Assessment Credits: 2 (1-2-0)
Course Description: Skills and strategies for the use of appropriate technology and assessment in teacher education.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 340 Literacy and the Learner Credits: 3 (1-2-1)
Course Description: Understanding and supporting literacy and numeracy development. Field experiences, service learning experiences.
Prerequisite: None.
Registration Information: Required background check through CDE, CBI, FBI. 30 credits of course work completed. Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 350 Instruction I-Individualization/Management Credits: 3 (2-2-0)
Course Description: Theory, research and practice of teaching at the junior high/middle school level; adapting instruction for individuals including learners with special needs.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 386. Admission to Teacher Licensure Program. Must register for lecture and laboratory. Includes fieldwork in public schools. Site placement may change due to public school needs.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 386 Practicum-Instruction I Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Must have concurrent registration in EDUC 350. Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 400 Diagnostic Teaching of Reading Credits: 3 (1-4-0)
Course Description: Development of the knowledge base, skills, and strategies for teaching reading from birth to age 8. Service learning experiences.
Prerequisite: EDUC 275 and EDUC 340 and HDFS 217 and HDFS 310.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 425 Early Childhood Education I Credits: 4 (2-6-0)
Course Description: Integrated methods; theoretical bases; teacher's role; appropriate curriculum; measurement; environments; pedagogy; instructional design and decisions.
Prerequisite: EDUC 275 and EDUC 340.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 426 Early Childhood Education II Credits: 4 (2-4-0)
Course Description: Integrated methods; organizing/presenting materials/activities; applying decisions; managing groups; individual instruction; assessment/evaluation.
Prerequisite: EDUC 425.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 450 Instruction II-Standards and Assessment Credits: 4 (2-4-0)
Course Description: Theory, research, and practice of standards-based instruction: assessment, literacy, and technology. Includes work in public schools.
Prerequisite: EDUC 350 and EDUC 386 and EDUC 331.
Registration Information: Must have concurrent registration in EDUC 486E. Must register for lecture and laboratory. Course must be taken semester immediately prior to student teaching semester.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 460 Methods and Materials in Teaching Science Credits: 4 (3-2-0)
Course Description: Current trends in science education, K-12; techniques of experimentation demonstrations; study of equipment, facilities, and resource materials.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 462 Methods and Assessment in Teaching Languages Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching languages in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; oral and written competency in language endorsement area.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
EDUC 463 Methods in Teaching Language Arts Credits: 4 (4-0-0)
Course Description: Objectives, content, and methods of teaching English, speech, and journalism in secondary schools.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 465 Methods and Materials in Social Studies Credits: 4 (4-0-0)
Course Description: Methods of teaching social studies; sources of information and teaching materials and literature for social studies teachers.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 466 Methods and Assessment in K-12 Art Education Credits: 4 (4-0-0)
Course Description: Objectives, methods, and resource materials for teaching art in elementary and secondary schools.
Prerequisite: EDUC 275.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 467 Instrumental Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: General music classes, choral techniques and literature; current practices and trends.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

EDUC 475 Elementary Music Methods II Credits: 2 (1-3-0)
Course Description: Classroom management, motivational strategies, technology tools, assessment/evaluation of music learning and field experiences in K-6 music education.
Prerequisite: EDUC 474.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

EDUC 476 Choral Methods for Secondary Schools Credits: 2 (1-3-0)
Course Description: General music classes, choral techniques and literature; current practices and trends.
Prerequisite: MU 217.
Registration Information: Admission to Teacher Licensure Program. Must register for lecture and laboratory.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

EDUC 485A Student Teaching: Elementary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 485B Student Teaching: Secondary Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: (EDUC 450) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462).
Registration Information: Appropriate special methods course(s) required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDUC 485C Student Teaching: Early Childhood Credits: Var[6-14] (0-0-0)
Course Description: Teacher education candidates participate in an intensive and extensive on-site capstone experience within a public school setting.
Prerequisite: EDUC 426.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

EDUC 486A Practicum: K-12 Classroom Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDUC 486B Practicum: Reading Credits: Var[1-18] (0-0-0)

Course Description:

Prerequisite: None.

Registration Information: Admission to Teacher Licensure Program.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

EDUC 486C Practicum: Mathematics Credits: Var[1-18] (0-0-0)

Course Description:

Prerequisite: None.

Registration Information: Admission to Teacher Licensure Program.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

EDUC 486D Practicum: Literacy Credits: Var[1-18] (0-0-0)

Course Description:

Prerequisite: None.

Registration Information: Admission to Teacher Licensure Program.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

EDUC 486E Practicum: Instruction II Credits: Var[1-18] (0-0-0)

Course Description:

Prerequisite: None.

Registration Information: Admission to Teacher Licensure Program.

Terms Offered: Fall, Spring, Summer.

Grade Mode: S/U Sat/Unsat Only.

Special Course Fee: No.

EDUC 493A Seminar: Professional Relations Credits: Var[1-3] (0-0-0)

Course Description: Collegial and professional discussions, support, and assistance.

Prerequisite: (EDUC 426 or EDUC 450) and (EDUC 485A, may be taken concurrently or EDUC 485B, may be taken concurrently or EDUC 485C, may be taken concurrently or EDCT 485) and (EDUC 460 or EDUC 474 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465 or EDUC 462). Additionally, EDCT 300.

Terms Offered: Fall, Spring.

Grade Mode: S/U Sat/Unsat Only.

Special Course Fee: No.

EDUC 493B Seminar: Assessment of Learning Credits: Var[1-3] (0-0-0)

Course Description: Information and techniques that enable educators to use assessment results to inform planning and instructional practices.

Prerequisite: (EDUC 426 or EDUC 450) and (EDUC 485B, may be taken concurrently or EDUC 485C, may be taken concurrently or EDCT 485, may be taken concurrently or EDUC 485A, may be taken concurrently) and (EDUC 460 or EDUC 462 or EDUC 463 or EDUC 464 or EDUC 465 or EDUC 466 or EDUC 474 or EDUC 475 or EDUC 476 or EDUC 477 or EDCT 425 or EDCT 431 or EDCT 441 or EDCT 451 or EDCT 465). Additionally, EDCT 300.

Registration Information: Appropriate special methods course(s).

Terms Offered: Fall, Spring.

Grade Mode: S/U Sat/Unsat Only.

Special Course Fee: No.

EDUC 494 Independent Field Studies Credits: Var[1-18] (0-0-0)

Course Description: Specialized field study in the public schools under direction and supervision of faculty.

Prerequisite: None.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

EDUC 495 Independent Study Credits: Var[1-18] (0-0-0)

Course Description:

Prerequisite: None.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Instructor Option.

Special Course Fee: No.

EDUC 496 Group Study Credits: Var[1-18] (0-0-0)

Course Description:

Prerequisite: None.

Terms Offered: Traditional.

Special Course Fee: No.

EDUC 501 Reading in the Content Areas Credits: 3 (3-0-0)

Course Description: Specific methods, materials, and techniques for helping students become more efficient in reading content area material.

Prerequisite: EDUC 320.

Term Offered: Summer.

Grade Mode: Traditional.

Special Course Fee: No.

EDUC 502 Human Relations in Education Credits: 3 (3-0-0)

Course Description: Human relations in an individual's educational, organizational, and social activities as applied to various educational settings.

Prerequisite: EDCT 300.

Registration Information: Bachelor's degree can substitute for EDCT 300. Sections may be offered: Online.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

EDUC 525A Expert Teaching: Inclusion/Special Needs Credits: 2 (0-0-2)

Course Description: Theories related to effective classroom instruction.

Prerequisite: None.

Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.

Term Offered: Spring.

Grade Mode: Traditional.

Special Course Fee: No.

EDUC 525B Expert Teaching: Thinking and Learning Credits: 2 (0-0-2)

Course Description: Theories related to effective classroom instruction.

Prerequisite: None.

Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.

Term Offered: Fall.

Grade Mode: Traditional.

Special Course Fee: No.
EDUC 525C Expert Teaching: Literacy and Numeracy Credits: 3 (0-0-3)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 525D Expert Teaching: Standards/Assessment Credits: 2 (0-0-2)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 526 Interdisciplinary Methods Credits: 4 (0-4-2)
Course Description: Theories related to effective classroom instruction.
Prerequisite: None.
Registration Information: Admission to Teacher Licensure Program; Bachelor's degree.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 530 Technology Enhanced Learning Credits: 3 (2-2-0)
Course Description: Enhancing instruction and learning through the effective use of technology.
Prerequisite: None.
Registration Information: Bachelor's degree. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 570 Perspectives of Special Education Credits: 3 (2-2-0)
Course Description: Historical and legal, philosophical foundations, student characteristics, and building collaborative relationships in special education.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 572 Special Needs-Foundations and Practices Credits: 3 (3-0-0)
Course Description: Theory related to foundations and professional practices relevant for teaching students with mild/moderate special needs.
Prerequisite: None.
Registration Information: Teacher Licensure.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 573 Differentiating Instruction for Diverse Needs Credits: 3 (3-0-0)
Course Description: Information techniques, and practice regarding methods for differentiating instruction.
Prerequisite: EDUC 570.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 574 Transition and Secondary Services Credits: 3 (3-0-0)
Course Description: Methods comprising state-of-the-art transition services for individuals with disabilities for the special education generalist.
Prerequisite: EDUC 570.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 575 Methods for Mild/Moderate Special Needs Credits: 4 (4-0-0)
Course Description: Methods addressing learning of students with mild/moderate special needs and instructional accommodations in regular classes.
Prerequisite: EDUC 572.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576A Issues in Education: Talented and Gifted Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576B Issues in Educ: Attention Deficit Disorder Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576C Issues in Education: Autism/Asperger's Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576D Issues in Education: Behavior is Language Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 576E  Issues in Education: Classroom Management  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576F  Issues in Education: Teaching Diversity  Credit: 1 (0-0-1)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576G  Issues in Education: Harassment in Schools  Credit: 1 (0-0-1)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576H  Issues in Education: Assessing Special Needs  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576I  Issues in Education: Sexually Transmitted Diseases  Credit: 1 (0-0-1)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576J  Issues in Education: Drugs and Alcohol  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576K  Issues in Education: Child Abuse  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 576L  Issues in Education: Traumatized Child  Credits: 2 (0-0-2)
Course Description: Issues in educating a diverse student population. Methods used in identification and assessment; strategies for intervention and/or instruction.
Prerequisite: None.
Registration Information: Bachelor's degree. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 591A  Workshop: Instruction  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 591B  Workshop: Community Partnerships  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 591C  Workshop: Annenberg/CPB Science Instruction  Credits: Var[1-3] (0-0-0)
Course Description: Science pedagogy for practicing K-12 teachers.
Prerequisite: None.
Registration Information: Offered as a telecourse only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
EDUC 591D Workshop: Annenberg/CPB Mathematics
Instruction Credits: Var[1-3] (0-0-0)
Course Description: Mathematics pedagogy for practicing K-12 teachers.
Prerequisite: None.
Restriction: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591E Workshop: Annenberg/CPB Educ Theory and Issues Credits: Var[1-3] (0-0-0)
Course Description: General educational theory and current issues for practicing K-12 teachers.
Prerequisite: None.
Restriction: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 591F Workshop: Annenberg/CPB Humanities Instruction Credits: Var[1-3] (0-0-0)
Course Description: English, social studies, or art pedagogy for practicing K-12 teachers.
Prerequisite: None.
Restriction: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 610 Principles of Supervision and Evaluation Credits: 3 (2-0-1)
Course Description: Supervision and evaluation of instruction including required Colorado evaluation training.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 618 School Law Credits: 3 (3-0-0)
Course Description: Legal framework for operation and management of public and private schools emphasizing legal responsibilities for administrators and teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 619 Curriculum Development Credits: 3 (3-0-0)
Course Description: Principles and procedures for school personnel in planning the public school curriculum.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 620 Philosophy of Education Credits: 2 (2-0-0)
Course Description: Contemporary philosophies as related to principles and practices in education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 622 Innovative Social Studies Teaching Credits: 3 (3-0-0)
Course Description: Current trends in secondary school social studies teaching and curriculum techniques and materials for value formulation, decision-making skills, concepts, generalizations, and attitudes.
Prerequisite: EDUC 485A or EDUC 485B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 623 Innovative Science Teaching Credits: 3 (0-2-2)
Course Description: Innovative trends in curriculum and methodology of science teaching.
Prerequisite: EDUC 485A or EDUC 485B.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 625 Contexts of Schooling Credits: 3 (3-0-0)
Course Description: History, purpose, structure, and role of schooling with relevance to current issues, U.S. and international.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to graduate program required.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 628 Models of Teaching Credits: 3 (3-0-0)
Course Description: Exploration of pedagogical topics and skill development related to instructional approaches.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate or professional standing only.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 629 Communication and Classrooms Credits: 3 (3-0-0)
Course Description: Exploration of pedagogical topics and growth experiences related to classroom management and presentation skills.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 635 Educators, Systems and Change  Credits: 3 (3-0-0)
Course Description: Process of change in education, focusing on
teacher's role as leader and facilitator.
Prerequisite: EDUC 485A or EDUC 485B.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 645 Leadership and Ethics in Public Education  Credits: 3 (3-0-0)
Course Description: Focus on leadership functions for public schools and
ethical dimensions of leadership.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 646 School Resource Management  Credits: 3 (3-0-0)
Course Description: School resource management including fiscal,
personnel, and organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Administrator Licensure Program.
Term Offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 647 School Culture, Climate, and Communications  Credits: 3 (3-0-0)
Course Description: Assist public school leaders in their facilitation role
in enhancing human relations and communication within schools and communities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in EDUC 645 and EDUC 646. Admission to Administrator Licensure Program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648A Role of the Principal: Professional Learning
Community Credit: 1 (1-0-0)
Course Description: Role of the principal as a result of changes in society
and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in
EDUC 687B. Admission to Administrator Licensure Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 648B Role of the Principal: Managing and Leading
Change  Credits: 2 (1-0-1)
Course Description: Role of the principal as a result of changes in society
and in the schools.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Must have concurrent registration in
EDUC 687B. Admission to Administrator Licensure Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 651 Multicultural and Special Populations  Credits: 3 (2-0-1)
Course Description: Special concerns for working with people of various
cultural, ethnic, exceptional, and special interest groups.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 660 Advanced Methods-Science and Math Instruction  Credits: 3 (0-0-3)
Course Description: Knowledge and skills to improve the teaching of
science, technology, engineering, and mathematics for in service K-12 teachers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 670 Grant Writing  Credits: 3 (0-0-3)
Course Description: Mechanics of proposal writing, including intangibles
of the grant-seeker's art.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 675 Analyzing Education Literature  Credits: 3 (1-0-2)
Course Description: Analyze, critique, and interpret scholarly literature in the
discipline.
Prerequisite: EDRM 700 or EDRM 702 or EDRM 704.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 684 Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDUC 686A Practicum: Administration Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 686B Practicum: Urban Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687A Internship: Administration Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687B Internship: Principal Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687C Internship: Guidance and Counseling Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 687D Internship: Teacher Licensure I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 687E Internship: Teacher Licensure II Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 693A Seminar: Administrator Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 693B Seminar: Instruction Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 693C Seminar: Teacher Licensure Capstone Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate or professional standing only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 709 Leadership Development Credits: 3 (3-0-0)
Course Description: Principles, theories, attributes, and skills related to individual leadership development.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 710 Higher Education Finance Credits: 3 (0-0-3)
Course Description: Federal, state, and local revenue distribution, budget preparation and controls, accounting options, audit preparation.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
EDUC 713 Teaching, Learning, and Professional Growth  Credits: 3 (3-0-0)
Course Description: Teaching, learning, and professional development perspectives related to educational change and reform.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 714 Education Policy Analysis  Credits: 3 (3-0-0)
Course Description: Frameworks for analyzing, designing policy proposals, and implementing plans.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Ph.D. program.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 715 Critical Issues for Special Populations  Credits: 3 (3-0-0)
Course Description: Social and cultural issues related to special populations are researched and analyzed to understand policy that guides educational decisions.
Prerequisite: EDUC 709 and EDUC 713.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 716 Capstone: Educational Equity and Reform  Credits: 3 (3-0-0)
Course Description: Applies tenets of educational leadership research and theory into a context of equity, global citizenship and environmental responsibility.
Prerequisite: EDUC 709 and EDUC 713.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 720 Human Learning, Cognition, and Motivation  Credits: 3 (3-0-0)
Course Description: Theories of learning, cognition, and motivation applicable to enhancing effective and efficient learning for individuals and teams.
Prerequisite: EDUC 628 or EDUC 629.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 725 Professionalism in Education and Leadership  Credits: 3 (3-0-0)
Course Description: Professional choices and ethical decision making in education and leadership, with emphasis on higher education.
Prerequisite: None.
Registration Information: Admission to Ph.D. program.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDUC 786 Practicum  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 787 Internship  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDUC 792 Seminar  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Sections may be offered: Online.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 793 Seminar  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDUC 795 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Education-Higher Ed-EDHE (EDHE)

Courses
EDHE 590A Workshop: Student Personnel-Admissions  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590B Workshop: Student Personnel-College Union Administration  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDHE 590C  Workshop: Student Personnel-Housing/Auxiliary Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590D  Workshop: Student Personnel-International Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590E  Workshop: Student Personnel-Career Services Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590F  Workshop: Student Personnel-Service Learning Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590G  Workshop: Student Personnel-Wellness Programs Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590H  Workshop: Advising Student Groups Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 590J  Workshop: Student Personnel-Access and Opportunity in Higher Education Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Registration Information: Enrollment in SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590K  Workshop: Student Personnel-Leadership and Service in Higher Education Credit: 1 (0-0-1)
Course Description: Various theories of leadership and citizenship development applied to different higher education and student affairs settings.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590L  Workshop: Student Personnel-Working with Student's Parents and Families Credit: 1 (0-0-1)
Course Description: Philosophies and best practices regarding partnering with the parents and families of today's college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Fall (even years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 590M  Workshop: Student Personnel-Spiritual Dimensions of Student Development Credit: 1 (0-0-1)
Course Description: Intersection of faith and spirituality and the learning, growth, and development of college students.
Prerequisite: None.
Registration Information: Enrollment in the SAHE program.
Term Offered: Spring (odd years).
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDHE 650  College Opportunity Program Models Credits: 3 (2-0-1)
Course Description: Examines rationale and structure of postsecondary retention programs that support underrepresented students based on college type and program purpose.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree or consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 651  Pre-College Program Models Credits: 3 (2-0-1)
Course Description: Rationale and structure of pre-college programs that support underrepresented students' successful enrollment into higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor's degree required. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
EDHE 653 Precollege Access Programs Credits: 3 (3-0-0)
Course Description: Precollege access programs effective practices to support underrepresented middle-high school students to prepare for and enroll in postsecondary.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program; written consent of instructor. Sections may be offered: Online.
Term Offered: Traditional.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 660 Financial Management in Student Affairs Credits: 2 (1-0-0)
Course Description: Budgeting, fiscal planning, and financial administration in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 661 Inclusive University Credits: 3 (3-0-0)
Course Description: Exploration of broad range of human differences and their impact in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 662 Trends/Issues/Assessment in Higher Education Credits: 2 (2-0-0)
Course Description: Assessment and research involving students in collegiate settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in the SAHE program. Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 670 College Student Personnel Administration Credits: 3 (0-0-3)
Course Description: Historical, philosophical, and professional development in student affairs functions; analysis of role of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program; written consent of instructor. Sections may be offered: Online.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 671 Higher Education Administration Credits: 3 (3-0-0)
Course Description: History, purpose, structure, and role of leadership within the administration of higher education with relevance to present day higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 672 Ethical and Practical Issues-Student Affairs Credits: 2 (2-0-0)
Course Description: Ethical principles and standards used in student affairs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 673 Student Development Theory Credits: 3 (0-0-3)
Course Description: Strategies for application of student development theories in practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

EDHE 674 Campus Ecology Credits: 3 (3-0-0)
Course Description: Patterns of relationships among students and the college campus' social and physical environments.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 675 Campus Crisis Management Credits: 3 (3-0-0)
Course Description: Crisis management on college campuses.
Prerequisite: None.
Registration Information: Bachelor's degree; enrollment in SAHE program. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 676 Organizational Behavior in Student Affairs Credits: 3 (3-0-0)
Course Description: Understanding and application of basic organizational behavior principles within administration of student affairs in higher education.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Term Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDHE 677  Law in Student Affairs  Credits: 3 (3-0-0)
Course Description: Legal issues focusing on sources and application of educational law and responsibilities of higher education administrators.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 678  Capstone in Student Affairs  Credits: 2 (2-0-0)
Course Description: Capstone analyzing current issues and leadership in transition to professional roles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDHE 692A  Seminar: Current Trends and Issues  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692B  Seminar: Working with Student Groups  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692C  Seminar: Service Learning  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 692D  Seminar: International Programs  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in SAHE program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 694  Independent Field Studies  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDHE 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 506  Human Resource Development  Credits: 3 (3-0-0)
Course Description: Human resource development foundational theory, research, and techniques for workplace and organizational learning and performance.
Prerequisite: None.
Registration Information: Admission to Organizational Learning, Performance and Change specialization or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 667  Power-Politics-Influence in Organizations  Credits: 3 (3-0-0)
Course Description: Creation and execution of power relationships, political engagements, and communications in organizations.
Prerequisite: EDOD 506.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 670  Strategic Human Resource Development  Credits: 3 (3-0-0)
Course Description: Examine fundamentals of strategy from an HRD perspective, utilizing management tools, recent research and contemporary theory.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDOD 671 Establish Relations, Diagnose Organizations  Credits: 3 (3-0-0)
Course Description: Build relationships with clients and examine current
courses to diagnose organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning,
Performance, and Change specialization or written consent of instructor.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 672 Change Facilitation  Credits: 3 (3-0-0)
Course Description: Roles and responsibilities of change agents and the
fundamentals of change: principles, practices, processes, and resistance
strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning,
Performance and Change specialization.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 673 Plan and Implement Change Interventions  Credits: 3 (3-0-0)
Course Description: Plan strategies and facilitate change interventions to
improve organizational learning and performance.
Prerequisite: EDOD 677, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning,
Performance and Change specialization or written consent of instructor.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 674 Analyze Workplace Learning  Credits: 3 (3-0-0)
Course Description: Analyze workplace learning and performance issues
drawing on foundational principles.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning,
Performance and Change specialization or written consent of instructor.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 675 Design, Develop, Implement Workplace Learning  Credits: 3 (3-0-0)
Course Description: Design, develop, and implement workplace learning
and performance interventions drawing on foundational principles.
Prerequisite: EDOD 674.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning,
Performance and Change specialization or written consent of instructor.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 676 Evaluate Workplace Learning  Credits: 3 (3-0-0)
Course Description: Evaluate workplace learning and performance
interventions drawing on foundational principles. Examine satisfaction,
learning, and performance results.
Prerequisite: EDOD 675, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning,
Performance and Change specialization or written consent of instructor.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 677 Action Learning and Inquiry  Credits: 3 (3-0-0)
Course Description: Literature reviews and data collection methods as
the basis for diagnosing organizational learning and performance issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning,
Performance and Change specialization or written consent of instructor.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 678 Assess Change Interventions  Credits: 3 (3-0-0)
Course Description: Assess and institutionalize change interventions to
improve organizational learning and performance.
Prerequisite: EDOD 500 to 799 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: 15 credits of EDOD 500-level or above courses
or written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 687 Internship  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692A Seminar: HRD Concepts--Workplace Learning  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 692B Seminar: HRD Concepts--Organizational Learning  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: EDOD 500 to 799 - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning,
Performance and Change specialization. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDOD 706 Organizational Learning, Performance, Change Credits: 3 (2-0-1)
Course Description: History, development, and current status of organizational learning, performance and change theory, research and practice (praxis).
Prerequisite: None.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization under the Education and Human Resource Studies Ph.D.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 768 Workforce Development Credits: 3 (3-0-0)
Course Description: Characteristics and elements of workforce development with special attention to the roles and responsibilities of employers and managers.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Organizational Learning, Performance and Change specialization under the Ph.D. in Education and Human Resource Studies. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 769 Theory and Practice of Change Credits: 3 (3-0-0)
Course Description: Theory, history, characteristics, nature, levels, and types of change and modern conceptual and integrated models of change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 770 Organizational Culture Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for evaluating, analyzing, and changing organizational culture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 771 Social Foundations of the Workplace Credits: 3 (2-0-1)
Course Description: Social, cultural and political systems in organizations and their implications for employers.
Prerequisite: EDOD 761 and EDOD 769.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 772 Theory Building in Applied Disciplines Credits: 3 (2-0-1)
Course Description: Theory building in workplace environments. Develop a theory and examine and critique existing theories.
Prerequisite: EDOD 766 and EDOD 771.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 773 Systems Leadership Credits: 3 (2-0-1)
Course Description: A systems conceptualization and approach to leadership and leadership development.
Prerequisite: EDOD 771 and EDOD 772, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
EDOD 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDOD 792 Seminar-Human Resource Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDOD 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Admission to Organizational Learning, Performance and Change specialization.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Education-Research Methods-EDRM (EDRM)

Courses

EDRM 600 Introduction to Research Methods Credits: 3 (3-0-0)
Course Description: Methods of research, scientific methods, problem identification, research design, preparation and evaluation of research reports.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 602 Action Research Credits: 3 (3-0-0)
Course Description: Provide educators with knowledge and skills to plan and implement school-based research to improve teaching and learning.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 606 Principles: Quantitative Data Analysis Credits: 3 (3-0-0)
Course Description: Quantitative data analysis in social science research; descriptive statistics; fundamentals of inference.
Prerequisite: EDRM 600 and STAT 201.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for VS 562, EDRM 606 and PBHL 560.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 612 Assessing Students in Educational Settings Credits: 3 (2-0-1)
Course Description: Various ways of assessing students including traditional, authentic, and portfolio techniques for P-20 education.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admissions into a Master's Program within the School of Education.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 666 Program Evaluation Credits: 3 (3-0-0)
Course Description: Models and practices of program evaluation in both public and private sector organizations.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 692 Seminar-Research Methods/Proposal Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 700 Quantitative Research Methods Credits: 3 (3-0-0)
Course Description: Design, data analysis, interpretation of results, and evaluation of educational research studies.
Prerequisite: EDRM 606, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: EDRM 606 or concurrent registration.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EDRM 701  Applied Linear Models-Educational Research  Credits: 3 (3-0-0)
Course Description: General linear model applications in educational research emphasizing conceptual understanding and characteristics of non-experimental designs.
Prerequisite: EDRM 606.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 702  Foundations of Educational Research  Credits: 3 (3-0-0)
Course Description: Philosophical, theoretical, and ethical foundations of educational research.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 703  Applied Longitudinal Data Analysis  Credits: 3 (3-0-0)
Course Description: Methods and empirical applications of individual growth modeling and discrete-time event history analysis in educational research.
Prerequisite: EDRM 701.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 704  Qualitative Research  Credits: 3 (3-0-0)
Course Description: Examination of qualitative research theory, methods, and applications to education and the social sciences.
Prerequisite: EDRM 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 705  Qualitative Data Analysis  Credits: 3 (3-0-0)
Course Description: Examination of qualitative methods of data analysis, data presentation, and use of computer.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 706  Analysis of Variance--Education Research  Credits: 3 (3-0-0)
Course Description: Analysis of variance applications in educational research; experimental design and analysis of data from experiments.
Prerequisite: EDRM 700, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 707  Quantitative Data Collection Methods/Analysis  Credits: 3 (0-0-3)
Course Description: Selection or development of questionnaires, tests, structured interviews, and observations. Reliability and validity. Reporting educational studies.
Prerequisite: EDRM 700.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 708  Narrative Inquiry  Credits: 3 (3-0-0)
Course Description: Theory, methods and design of narrative approaches to research including data collection and analysis applications.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 711  Ethnographic Research  Credits: 3 (3-0-0)
Course Description: Theoretical underpinnings, research design, ethics and practical application of ethnographic research in a naturalistic setting.
Prerequisite: EDRM 704.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

EDRM 786  Practicum  Credits: Var[1-6] (0-0-0)
Course Description: Examination of qualitative research theory, methods, and applications to education and the social sciences.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

EDRM 792A  Seminar: Research Methodology  Credits: Var[1-18] (0-0-0)
Course Description: Examination of qualitative methods of data analysis, data presentation, and use of computer.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 792B  Seminar: Proposal Development  Credits: Var[1-18] (0-0-0)
Course Description: Examination of qualitative methods of data analysis, data presentation, and use of computer.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

EDRM 798  Research  Credits: 18 (0-0-0)
Course Description: Examination of qualitative methods of data analysis, data presentation, and use of computer.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
EDRM 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Electric + Computer Engrg-ECE (ECE)

Courses

ECE 102 Digital Circuit Logic Credits: 4 (3-2-0)
Course Description: Boolean algebra; Karnaugh maps; multiplexers, decoders, ROMS, PLAS, flip-flops, counters; sequential networks; state tables.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 103 DC Circuit Analysis Credits: 3 (2-2-0)
Course Description: Basic DC circuit analysis. Use of scientific-oriented software to solve problems and analyze small projects.
Prerequisite: MATH 160 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 202 Circuit Theory Applications Credits: 4 (3-3-0)
Course Description: Basic circuit analysis techniques and applications to engineering design problems.
Prerequisite: ECE 103 with a minimum grade of C and MATH 161 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 204 Introduction to Electrical Engineering Credits: 3 (3-0-0)
Course Description: Basic analog and digital circuits and systems; introduction to electromechanical devices.
Prerequisite: MATH 161 and PH 142.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 251 Introduction to Microprocessors Credits: 4 (3-3-0)
Course Description: Microprocessor organization, assembly language, I/O techniques, real-time interfaces, applications, hardware/software.
Prerequisite: ECE 102 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 303 Introduction to Communications Principles Credits: 3 (3-0-0)
Also Offered As: STAT 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently or MATH 345, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 311 Linear System Analysis I Credits: 3 (3-0-0)
Course Description: Continuous and discrete time signals and systems representations in time and frequency domain; time convolution.
Prerequisite: (ECE 202 with a minimum grade of C) and (MATH 340 with a minimum grade of C or MATH 345 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 312 Linear System Analysis II Credits: 3 (3-0-0)
Course Description: Laplace and Z transforms, applications to modulation, filtering and sampling, state space representation.
Prerequisite: ECE 311 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 325 Telecommunication Networks Credits: 3 (3-0-0)
Course Description: Principle technologies that support data and voice communications.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 331 Electronics Principles I Credits: 4 (3-3-0)
Course Description: Discrete component semiconductor devices, characteristics and applications. Rectifier circuits, single-stage and multi-stage amplifiers.
Prerequisite: (ECE 202 with a minimum grade of C) and (MATH 340 with a minimum grade of C or MATH 345 with a minimum grade of C) and (PH 142 with a minimum grade of C).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 332 Electronics Principles II Credits: 4 (3-3-0)
Course Description: Discrete and integrated-circuit amplifiers-frequency response, negative feedback; digital logic circuits.
Prerequisite: ECE 331 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
ECE 341  Electromagnetic Fields and Devices I  Credits: 3 (3-0-0)
Course Description: Basic concepts of electrostatic and magnetostatic fields.
Prerequisite: (ECE 202 with a minimum grade of C) and (MATH 340 with a minimum grade of C or MATH 345 with a minimum grade of C) and (PH 142 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 342  Electromagnetic Fields and Devices II Credits: 3 (3-0-0)
Course Description: Basic concepts of time varying electromagnetic fields and transmission lines.
Prerequisite: ECE 341 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 395A  Independent Study Credits: Var[1-6] (0-0-0)
Course Description: Development and implementation of a project in an Electrical and Computer Engineering field of special interest under the supervision of a faculty member.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395B  Independent Study: Open Option Project Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 395C  Independent Study: Vertically Integrated Project Credits: Var[1-6] (0-0-0)
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.
Prerequisite: None.
Registration Information: Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 401  Senior Design Project I Credits: 3 (1-4-0)
Course Description: Advanced project, seminar series, formal written report, and oral presentation.
Prerequisite: ECE 401.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

ECE 402  Senior Design Project II Credits: 3 (1-4-0)
Course Description: Advanced project, formal report, and oral presentation.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 441. Must register for lecture and laboratory.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 404  Experiments in Optical Electronics Credits: 2 (1-3-0)
Course Description: Experiments in optical electronics and lasers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 411  Control Systems Credits: 4 (3-3-0)
Course Description: Control system analysis and design for linear systems: stability and performance; time and frequency domain techniques.
Prerequisite: ECE 312 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 412  Digital Control and Digital Filters Credits: 3 (3-0-0)
Course Description: FIR and IIR digital filter design, analog and digital invariance and direct digital control algorithms, hybrid systems analysis.
Prerequisite: ECE 411.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 421  Telecommunications I Credits: 3 (3-0-0)
Course Description: Digital communication (source coding; modulation and detection; channel coding), analog communication (modulation).
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 422 Telecommunications II Credits: 3 (3-0-0)
Course Description: Issues of source coding, detection and estimation, and equalization; introduction of information theory.
Prerequisite: ECE 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 423 DSP for Communications Credits: 3 (1-4-0)
Course Description: Design and programming of communication and signal processing algorithms into DSP hardware using C and assembly language.
Prerequisite: ECE 342 with a minimum grade of C-

Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 430 Fourier and Wavelet Analysis with Apps Credits: 3 (3-0-0)
Also Offered As: MATH 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 430 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 431 Biomedical Signal and Image Processing Credits: 3 (3-0-0)
Also Offered As: BIOM 431.
Course Description: Principles, features and mathematical processing of biomedical signals and images including interference and noise filtering and feature enhancement.
Prerequisite: (ECE 303 with a minimum grade of C and ECE 311 with a minimum grade of C) and (PH 142 with a minimum grade of C).
Registration Information: Credit not allowed for both BIOM 431 and ECE 430.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 432 Optical Electronics Credits: 3 (3-0-0)
Course Description: Concepts of modern physics, optical properties of atoms, light sources, lasers, optical detectors, optical cavities, and optical fiber transmission.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 433 Numerical Algorithms for VLSI Modeling Credits: 4 (3-3-0)
Course Description: Provide the foundational knowledge of numerical algorithms for modeling and simulations of high speed VLSI circuits.
Prerequisite: ECE 312 with a minimum grade of C- and ECE 332 with a minimum grade of C- and ECE 342 with a minimum grade of C-
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 441 Antennas and Radiation Credits: 3 (3-0-0)
Course Description: Retarded potential theory, antenna arrays, long wire antennas, dipoles, aperture antennas, receiving antennas.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 442 Digital System Design Laboratory Credits: 1 (0-3-0)
Course Description: Small digital circuits are designed and simulated using very high speed hardware description language and synthesis tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 451.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 444 Antennas and Radiation Credits: 3 (3-0-0)
Course Description: Retarded potential theory, antenna arrays, long wire antennas, dipoles, aperture antennas, receiving antennas.
Prerequisite: ECE 342 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 450 Digital System Design Credits: 3 (3-0-0)
Course Description: State machines with PLAs as controllers and small computers; timing and race elimination considerations; state and microprogramming implementation.
Prerequisite: ECE 102 with a minimum grade of C and ECE 202 with a minimum grade of C.
Registration Information: Concurrent registration in ECE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 451 Computer Organization and Architecture Credits: 3 (3-0-0)
Course Description: CPU design, microarchitecture; data path and control path; pipelining; memory system; I/O system; program optimization by system software/hardware.
Prerequisite: ECE 251 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 452 Database Computers Credits: 3 (3-0-0)
Course Description: Computer architectures for database processing. Data filters, associative processors, parallel and distributed computers, text search processors.
Prerequisite: ECE 251 with a minimum grade of C- or CS 370.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 453 Introduction to Robot Programming/Simulation Credits: 3 (3-0-0)
Course Description: Fundamentals of simulating and programming of workcells that include robots and other articulated objects.
Prerequisite: CS 155 with a minimum grade of C and CS 156 with a minimum grade of C or CS 370.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 456  Computer Networks  Credits: 4 (3-3-0)
Course Description: Circuit/packet switching, protocols, LAN/MAN, TCP/IP, error correction, wireless LANS, mobile networks.
Prerequisite: (CS 160 with a minimum grade of C or CS 157 with a minimum grade of C and CS 155 with a minimum grade of C) and (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 457  Fourier Optics  Credits: 3 (3-0-0)
Course Description: Introduction to optical systems for signal and information processing with emphasis on Fourier optics.
Prerequisite: ECE 311 with a minimum grade of C and ECE 342 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 461  Power Systems  Credits: 3 (3-0-0)
Course Description: Multi-phase power systems; power generation, transformer design, power distribution, power costs.
Prerequisite: ECE 332 with a minimum grade of C and ECE 462 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 462  Power Systems Laboratory  Credit: 1 (0-3-0)
Course Description: Set of labs designed to enhance students’ understanding of power systems.
Prerequisite: ECE 332 with a minimum grade of C and ECE 461 with a minimum grade of C, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 465  Electrical Energy Generation Technologies  Credits: 3 (3-0-0)
Course Description: Various electrical energy generation alternatives. Comparisons based on cost, reliability, availability and environmental impact.
Prerequisite: ECE 202 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 466  Integrated Lighting Systems  Credits: 3 (3-0-0)
Course Description: Technical underpinnings of light sources, their associated heat sink fixtures and power electronics drivers.
Prerequisite: ECE 331 or INTD 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471A  Semiconductor Physics  Credit: 1 (1-0-0)
Course Description: Fundamentals of semiconductor electron, hole states and motion: bandgap, effective mass, carrier density, Fermi level, doping, drift and diffusion.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 471B  Semiconductor Junctions  Credit: 1 (1-0-0)
Course Description: Quantitative analysis of field, carrier and current distributions in pn and metal-semiconductor junctions.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471A, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 472  MOS Integrated Circuits  Credits: 3 (3-0-0)
Course Description: MOS transistor theory, design rules, layout design, gate, cell and circuit design, memories, clocking strategies, MOS technologies.
Prerequisite: ECE 332 with a minimum grade of C-.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 495A  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description: Development and implementation of a project in an electrical and computer engineering field of special interest under the supervision of a faculty member.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 495B  Independent Study: Open Option Project  Credits: Var[1-6] (0-0-0)
Course Description: Students will work on an array of different electrical and computer engineering projects independently or under the guidance of industry mentors. Projects will be initiated by students or outside sources and will consist of small-scale service/outreach projects or market-driven projects that simulate a business environment.
Prerequisite: None.
Registration Information: Junior standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
ECE 495C Independent Study: Vertically Integrated Projects Credits: Var[1-6] (0-0-0)
Course Description: Explore and develop comprehensive applications of electrical and computer engineering technologies as a member of a team, especially as they relate to active research areas of CSU faculty members.
Prerequisite: None.
Registration Information: Jr. standing. Contact department for registration. May be taken up to 6 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 503 Ultrafast Optics Credits: 3 (3-0-0)
Course Description: Principles and theory behind ultrashort pulse generation, amplification, and manipulation.
Prerequisite: (ECE 341) and (ECE 342 or ECE 343).
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 504 Physical Optics Credits: 3 (3-0-0)
Course Description: Classical optics from first principles; basic electromagnetic theory to wave and geometric guides.
Prerequisite: ECE 341 and ECE 342.
Registration Information: Graduate standing can substitute for ECE 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 505 Nanostructures: Fundamentals and Applications Credits: 3 (3-0-0)
Course Description: Fundamentals of quantum confinement; nanostructures optical properties; fabrication and characterization.
Prerequisite: ECE 342 and PH 353.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 506 Optical Interferometry and Laser Metrology Credits: 3 (3-0-0)
Course Description: High resolution metrology techniques utilizing and interferometric sensors using lasers and other light sources.
Prerequisite: ECE 341 and ECE 342 and ECE 441.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 507 Plasma Physics and Applications Credits: 3 (3-0-0)
Course Description: Fundamental principles and industrial applications of plasmas.
Prerequisite: ECE 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 508 Introduction to Power System Markets Credits: 3 (3-0-0)
Also Offered As: ENGR 508.
Course Description: Deregulated electrical power systems, system security, investments in generation and transmission, ancillary services, and nodal pricing.
Prerequisite: ECE 461.
Registration Information: Credit not allowed for both ECE 508 and ENGR 508. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 509 Signal Processing for Power Systems Credits: 3 (3-0-0)
Also Offered As: ENGR 509.
Course Description: Signal processing tools for analyzing power systems, voltage frequency, magnitude variations, unbalance, waveform distortion.
Prerequisite: ECE 312 and ECE 461.
Registration Information: Credit not allowed for both ECE 509 and ENGR 509. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 510 Wide-Area Monitoring for Power Systems Credits: 3 (3-0-0)
Course Description: WAMS for modern power grid including signal processing, communications and networking techniques in WAMS/WAMS applications.
Prerequisite: ECE 312 with a minimum grade of C and ECE 461 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 511 Global Navigation Satellite System Receivers Credits: 3 (3-0-0)
Course Description: Fundamentals of global navigation satellite systems (GNSS) receivers and software-based implementation of GNSS receiver functions.
Prerequisite: ECE 312 with a minimum grade of C and ECE 411, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 512 Digital Signal Processing Credits: 3 (3-0-0)
Course Description: Discrete time signals and systems, digital filter design and implementation, fast algorithms, quantization effects.
Prerequisite: ECE 312 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 513 Digital Image Processing Credits: 3 (3-0-0)
Course Description: Image acquisition and display systems, image enhancement, restoration and encoding, image analysis; real-life applications.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a minimum grade of C) and (ECE 312 with a minimum grade of C).
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 514  Applications of Random Processes  Credits: 3 (3-0-0)
Course Description: Bit-error rates, signal-to-noise power ratio, signal
detection, signal estimation, Wiener filter, application.
Prerequisite: (ECE 303 with a minimum grade of C or STAT 303 with a
minimum grade of C) and (ECE 312 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 515  Satellite Navigation Systems Engineering  Credits: 3 (3-0-0)
Course Description: Fundamentals of GPS, satellite orbits, ground
monitoring and control, receiver systems, measurement errors and
correction techniques, and position, velocity, and time calculations.
Prerequisite: (CS 160 with a minimum grade of C or CS 163 with a
minimum grade of C or CS 164 with a minimum grade of C) and (ECE 311
with a minimum grade of C and MATH 261 with a minimum grade of C
and PH 142 with a minimum grade of C).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 516  Information Theory  Credits: 3 (3-0-0)
Course Description: Information measures and their properties; lossless
data compression, channel capacity, channel coding theorem; rate
distortion theorem.
Prerequisite: (ECE 303 or STAT 303) and (ECE 421).
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 520  Optimization Methods-Control and Communication  Credits: 3
(3-0-0)
Course Description: Linear and nonlinear optimization theory and
methods; applications in systems, control, and communication.
Prerequisite: MATH 229 and MATH 317.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 521  Satellite Communication  Credits: 3 (3-0-0)
Course Description: Principles of satellite communication systems
engineering.
Prerequisite: ECE 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 524  Wireless Telecommunications  Credits: 3 (3-0-0)
Course Description: Physical layer design, including channel modeling,
receiver design and performance, and multiple access techniques.
Prerequisite: ECE 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 525  Fiber Optic Communications  Credits: 3 (3-0-0)
Course Description: Optoelectronic and optical components for fiber
optics; communications system physical layer issues and examples.
Prerequisite: ECE 471B.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 526  Biological Physics  Credits: 3 (3-0-0)
Also Offered As: BIOM 526.
Course Description: Mathematical and physical modeling of biological
systems. Mass transport in cellular environments. Electrical/mechanical
properties of biomolecules.
Prerequisite: (MATH 340 or MATH 345) and (PH 122 or PH 142).
Registration Information: Credit not allowed for both ECE 526 and
BIOM 526. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 532  Dynamics of Complex Engineering Systems  Credits: 3 (3-0-0)
Also Offered As: ENGR 532.
Course Description: Higher-level behavior and issues that emerge from
interaction between components in complex socio-technical systems.
Prerequisite: ENGR 501, may be taken concurrently or ECE 501, may be
taken concurrently.
Registration Information: Credit not allowed for both ECE 532 and
ENGR 532. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 534  Analog Integrated Circuit Design  Credits: 3 (3-0-0)
Course Description: Design methods for state-of-the-art analog integrated
circuits including CMOS op-amps, comparators, and phase-locked loops.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Must have concurrent registration in ECE 535.
Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 535  Analog Integrated Circuit Laboratory  Credit: 1 (0-2-0)
Course Description: Analog integrated circuits are designed and
simulated using modern software tools.
Prerequisite: None.
Registration Information: Must have concurrent registration in ECE 534.
Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 536  RF Integrated Circuit Design  Credits: 3 (3-0-0)
Course Description: Design of state-of-the-art ICs for RF applications
including CMOS low-noise amplifiers, voltage-controlled oscillators,
mixers and power amplifiers.
Prerequisite: ECE 332.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 557  Biomedical Signal Processing  Credits: 3 (3-0-0)
Also Offered As: BIOM 537.
Course Description: Measuring, manipulating, and interpreting biomedical
signals.
Prerequisite: MATH 340 or ECE 311 or STAT 303.
Registration Information: Credit not allowed for both ECE 537 and
BIOM 537.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
ECE 538 Design/Analysis of Analog Digital Interface  Credits: 4 (3-3-0)
Course Description:  Topics of interface circuit designs analog and digital
interfaces. Basic concept of designing and analyzing analog and digital
interface circuits.
Prerequisite:  ECE 312 with a minimum grade of C and ECE 332 with a
minimum grade of C and ECE 451 with a minimum grade of C.
Registration Information:  Must register for lecture and laboratory.
Terms Offered:  Fall, Spring (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 540 Computational Electromagnetics  Credits: 3 (3-0-0)
Course Description:  Computational techniques for practical applications
in electromagnetic fields, devices, scattering, propagation, and radiation.
Prerequisite:  ECE 342.
Term Offered:  Spring (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 541 Accelerator Engineering  Credits: 3 (3-0-0)
Course Description:  Development and uses of accelerators and storage
rings. Principles of electric and magnetic fields used to bend, focus and
accelerate charged particles.
Prerequisite:  ECE 342 with a minimum grade of C or PH 351 with a
minimum grade of C.
Registration Information:  Sections may be offered: Online.
Term Offered:  Spring (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 542 Parallel CAD Algorithms for IC Design  Credits: 3 (3-0-0)
Course Description:  Cutting edge CAD paradigms for fast simulation of
massively coupled circuits in nanoscale integrated circuits.
Prerequisite:  ECE 311 with a minimum grade of C and ECE 331 with a
minimum grade of C.
Term Offered:  Spring (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 543 Laser Fundamentals and Devices  Credits: 3 (3-0-0)
Course Description:  Amplification of light, laser excitation mechanisms,
laser devices, characteristics and design.
Prerequisite:  ECE 441.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 544 Microwave Theory and Component Design  Credits: 3 (3-0-0)
Course Description:  Fundamentals of microwave engineering, components,
devices, and measurements.
Prerequisite:  ECE 342 with a minimum grade of C.
Registration Information:  Sections may be offered: Online.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 545 Radar Systems and Design  Credits: 3 (3-0-0)
Course Description:  Fundamental ideas of radar operation and basic
design of various radar types including current topics.
Prerequisite:  ECE 444.
Registration Information:  Sections may be offered: Online.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 546 Advanced Robotics–Redundancy & Optimization  Credits: 3 (3-0-0)
Course Description:  Advanced analysis, design, and control of
kinematically redundant articulated objects, including both robotic and
biological systems.
Prerequisite:  ECE 455 and MATH 369.
Term Offered:  Spring (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 549 Advanced Robotics–Manipulators & Kinematics  Credits: 3 (3-0-0)
Course Description:  Advanced analysis, design, and control of
kinematically redundant articulated objects, including both robotic and
biological systems.
Prerequisite:  ECE 455 and MATH 369.
Term Offered:  Spring (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 550A Microprocessors Based Systems  Credits: 4 (3-2-0)
Course Description:  High-performance microprocessors, e.g., 68000
family; intelligent I/O processors. Asynchronous bus, virtual memory,
microprocessor in control and multi-user systems.
Prerequisite:  ECE 451.
Registration Information:  CSUN students only. Must register for lecture
and laboratory.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 551 Microwave and Beam Instrumentation Lab  Credits: 3 (2-3-0)
Course Description:  Particle beam instrumentation, microwave
measurements and magnetic measurements used in the design and
diagnoses of charged particle beam accelerators.
Prerequisite:  ECE 342 with a minimum grade of C or PH 351 with a
minimum grade of C.
Term Offered:  Fall (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 552 Pulsed Power and Intense Beams  Credits: 3 (3-0-0)
Course Description:  Engineering concepts of high-power pulsed
electronics and RF systems; how to produce and utilize intense beams.
The conversion of electrical power.
Prerequisite:  ECE 341 with a minimum grade of C or ECE 342 with a
minimum grade of C or PH 351 with a minimum grade of C.
Registration Information:  Sections may be offered: Online.
Term Offered:  Spring (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

ECE 554 Computer Architecture  Credits: 3 (3-0-0)
Course Description:  Fundamentals of computer design, multiprocessors
and thread-level parallelism, storage systems, and interconnection
networks and clusters.
Prerequisite:  ECE 452 or CS 470.
Registration Information:  Sections may be offered: Online.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.
ECE 557  Digital Optical Computing  Credits: 3 (3-0-0)
Course Description: Optical devices; optical disks, holographic memories; interconnection networks. Optical systems for numerical and nonnumerical data processing.
Prerequisite: ECE 441 or ECE 451 or ECE 554.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 560  Foundations of Fine-Grain Parallelism  Credits: 4 (3-2-0)
Also Offered As: CS 560.
Course Description: Programming novel architectures; performance tuning; automatic parallelization; program transformation; polyhedral model; equational programming.
Prerequisite: CS 475.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ECE 560 and CS 560.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 561  Hardware/Software Design of Embedded Systems  Credits: 4 (3-3-0)
Also Offered As: CS 561.
Course Description: Embedded systems design including system level modeling, design space exploration, hardware-software partitioning, high level synthesis.
Prerequisite: CS 270 or CS 470 or ECE 251 or ECE 452.
Registration Information: Credit not allowed for both ECE 561 and CS 561. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 562  Power Electronics I  Credits: 3 (3-0-0)
Course Description: Switch mode and resonant converters, control using switch averaged dynamic models, modeling of all circuit components including sources, loads, and switches.
Prerequisite: ECE 332 with a minimum grade of C.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 563  Power Electronics II  Credits: 3 (3-0-0)
Course Description: Electrical energy, processing circuits, lightweight power management, and power conversion circuits emphasizing small signal transfer functions.
Prerequisite: ECE 562.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 564  Resonant Converters  Credits: 3 (3-0-0)
Course Description: Analysis and design of resonant converters.
Prerequisite: ECE 562.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 565  Electrical Power Engineering  Credits: 3 (3-0-0)
Also Offered As: ENGR 565.
Course Description: Analysis of power systems in terms of current, voltage, and active/reactive power; introduction of computer-aided tools for power systems.
Prerequisite: ECE 332 and ECE 342.
Registration Information: Credit not allowed for both ECE 565 and ENGR 565. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 566  Grid Integration of Wind Energy Systems  Credits: 3 (3-0-0)
Also Offered As: ENGR 566.
Course Description: Aspects of integration of wind energy conversion systems (WECS) to electric power transmission grids.
Prerequisite: ECE 461 and ECE 462 or ECE 565.
Registration Information: Credit not allowed for both ECE 566 and ENGR 566. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 568  Electrical Energy Generation Systems  Credits: 3 (3-0-0)
Also Offered As: ENGR 568.
Course Description: Energy systems: renewable and traditional. Physics and operation of energy devices; solar-photovoltaic, wind energy, gas, coal and nuclear plants.
Prerequisite: None.
Registration Information: Written consent of instructor. Credit not allowed for both ECE 568 and ENGR 568. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 569  Micro-Electro-Mechanical Devices  Credits: 3 (3-0-0)
Also Offered As: MECH 569.
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: ECE 331 with a minimum grade of C or MECH 344 with a minimum grade of C.
Registration Information: Credit not allowed for both ECE 569 and MECH 569. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 571  VLSI System Design  Credits: 3 (3-0-0)
Course Description: Design of integrated circuits at the system level including cell design, digital systems, parallel architecture, systolic arrays.
Prerequisite: (ECE 451) and (ECE 575, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 572  Semiconductor Transistors  Credit: 1 (1-0-0)
Course Description: Quantitative analysis of electric field, carrier and current distributions in MOSFETs and bipolar junction transistors; scaling, non-idealities.
Prerequisite: ECE 331 with a minimum grade of C and ECE 471B, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ECE 573 Semiconductor Optoelectronics Laboratory Credits: 3 (1-4-0)
Course Description: Experimental characterization techniques for semiconductor optoelectronic devices and design and testing of related electronic circuits.
Prerequisite: ECE 471B.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 574 Optical Properties in Solids Credits: 3 (3-0-0)
Course Description: Light propagation and interaction with materials; linear and non-linear optical properties.
Prerequisite: ECE 441 with a minimum grade of C.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 575 Experiments in VLSI System Design I Credit: 1 (0-3-0)
Course Description: Set of labs designed to enhance students’ understanding of the materials in ECE 571.
Prerequisite: ECE 451.
Registration Information: Must have concurrent registration in ECE 571.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 576 VLSI Processing—Science and Technology Credits: 3 (3-0-0)
Course Description: Physics, chemistry of VLSI processing including plasma, thermal techniques of oxidation, deposition; photolithography, etching, cleaning, process modeling.
Prerequisite: ECE 472.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 577 Internship Credits: Var[1-6] (0-0-0)
Course Description: Internship experience in Electrical or Computer Engineering.
Prerequisite: ECE 312 or ECE 456.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECE 578 VLSI System Design II Credits: 3 (3-0-0)
Course Description: Technology and circuit design for VLSI systems.
Prerequisite: ECE 576 and (ECE 411 or MECH 417) and (ECE 565 or ENGR 565).
Restriction: Must be a Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 579 Internship Experience in Electrical Engineering Credits: Var[1-6] (0-0-0)
Course Description: Internship experience in Electrical Engineering.
Prerequisite: ECE 577.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECE 580 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 581 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 582 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 583 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 584 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 585 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 586 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Internship experience in Electrical or Computer Engineering.
Prerequisite: ECE 312 or ECE 456.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ECE 588 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 589 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 590 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 591 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 592 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 593 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 594 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 595 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 596 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 597 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 598 Advanced Topics in Electrical Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in electrical engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 599 Advanced Topics in Computer Engineering Credits: 3 (3-0-0)
Course Description: Advanced topics in computer engineering.
Prerequisite: ECE 504 and PH 451.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ECE 641 Electromagnetics Credits: 3 (3-0-0)
Course Description: Electrostatics, magnetostatics, boundary value problems, EM induction, quasi-statics, Maxwell's equations.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 642 Time Harmonic Electromagnetics Credits: 3 (3-0-0)
Course Description: Maxwell's equations, radiation, boundary value problem, dyadic Green's functions, scattering theory.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 643 Advanced Accelerator Engineering Credits: 3 (3-0-0)
Course Description: Advanced concepts in particle beam accelerator technology and engineering, linear accelerators and principles of intense pulsed electron ion beams.
Prerequisite: ECE 543 with a minimum grade of C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 650 Extreme Ultraviolet and Soft X-Ray Radiation Credits: 3 (3-0-0)
Course Description: Fundamental principles of short wavelength electromagnetic radiation.
Prerequisite: ECE 342.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 651 Detection Theory Credits: 3 (3-0-0)
Course Description: Neyman-Pearson and Bayes detectors and properties, matched filter and matched subspace detectors, distributed detection, and applications.
Prerequisite: ECE 512 and ECE 514.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 652 Estimation and Filtering Theory Credits: 3 (3-0-0)
Course Description: Linear and Nonlinear parameter and state estimation methods; Optimal Kalman state estimation and applications.
Prerequisite: (ECE 411 or ECE 412) and (ECE 514 or STAT 525).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 655 Multidimensional Digital Signal Processing Credits: 3 (3-0-0)
Course Description: Multidimensional signals and systems, 2-D transforms, stability methods, design and implementations, spectral factorization, and image modeling.
Prerequisite: ECE 512.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 656 Machine Learning and Adaptive Systems Credits: 3 (3-0-0)
Course Description: Adaptive system theory, statistical pattern recognition, supervised and unsupervised learning, support vector machines, manifold learning, applications.
Prerequisite: ECE 512.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 658 Internet Engineering Credits: 4 (3-3-0)
Also Offered As: CS 658.
Course Description: Link technologies, multiple access, hardware and software for internetworks, switching, flow control, multicast, performance, and applications.
Prerequisite: ECE 456 or CS 457.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ECE 658 and CS 658. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 660 Advanced Topics in VLSI Design Credits: 3 (3-0-0)
Course Description: VLSI synthesis, optimization, and other issues.
Prerequisite: ECE 571.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 661 Advanced Topics in Embedded Systems Credits: 4 (3-3-0)
Course Description: Embedded systems design: networks on chip, novel memory architectures, synthesis algorithms, optimization for low power, fault tolerance, security.
Prerequisite: (ECE 452) and (ECE 561 or CS 561).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 666 Topics in Robotics Credits: 3 (3-0-0)
Course Description: Recent advances in robotics, automation, and intelligent systems.
Prerequisite: ECE 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Also Offered As: CS 670B.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 670B and CS 670B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 670C  Topics in Architecture/Systems: Distributed Systems  Credits: Var[1-4] (0-0-0)
Also Offered As: CS 670C.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 670C and CS 670C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Also Offered As: CS 670D.
Course Description:
Prerequisite: ECE 554 or CS 570.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 670D and CS 670D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 672  Principles of Semiconductors  Credits: 3 (3-0-0)
Also Offered As: PH 672.
Course Description: Electronic properties of semiconductors; band structure, statistics, transport properties, photoelectronic properties, potential barriers, interfaces.
Prerequisite: ECE 471B or PH 531.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 672 and PH 672.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 673  Thin Film Growth  Credits: 3 (3-0-0)
Course Description: Microstructures of physically vapor-deposited films; thin-film morphological development; atomistic processes of condensation, nucleation, and growth.
Prerequisite: CHEM 474 or CHEM 476 or MECH 337 or PH 361 or PH 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 674  Heterogeneous Computing  Credits: 3 (3-0-0)
Also Offered As: CS 674.
Course Description: Allocation of resources to tasks in parallel and distributed heterogeneous computing systems. A variety of computational environments are considered.
Prerequisite: CS 570 or CS 575 or ECE 550A or ECE 550B or ECE 554.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 674 and CS 674.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ECE 695 and ENGR 697.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 721  Topics in Communication Theory  Credits: 3 (3-0-0)
Course Description: Detection and estimation theory; radar-sonar problems; nonlinear modulation; information theory; communication systems.
Prerequisite: ECE 521.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 742  Topics in Electromagnetics  Credits: 3 (3-0-0)
Course Description: Applications of wave propagation and scattering to microwave radar, Doppler radar, meteorological radar applications.
Prerequisite: ECE 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ECE 744  Topics in Plasma Dynamics  Credits: 3 (3-0-0)
Course Description: Kinetic equations, nonlinear theory of waves and instabilities; plasma fluctuation and radiations; plasma diagnostics and plasma heating.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 752  Topics in Signal Processing  Credits: 3 (3-0-0)
Course Description: Adaptive filtering, spectral estimation, sonar/radar signal processing, and detection/classification schemes.
Prerequisite: (ECE 512) and (ECE 514 or STAT 525).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ECE 777  X-Ray Lasers  Credits: 3 (3-0-0)
Course Description: Fundamentals, design, and implementation of soft X-ray lasers and X-ray optics.
Prerequisite: ECE 546.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ECE 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ECE 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Engineering Science-EGSC (EGSC)

Courses
EGSC 492  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
EGSC 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Engineering-ENGR (ENGR)

Courses
ENGR 101  Grand Challenges in Engineering  Credits: 3 (3-0-0)
Course Description: National Academy of Engineering's Grand Challenges in Engineering: overview, roles of engineering disciplines, engineering and societal challenges.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ENGR 102  Problem Solving for Engineers  Credits: 3 (3-0-0)
Course Description: Engineering problem solving: dimensional analysis; precision, accuracy, repeatability; problems from all major engineering disciplines.
Prerequisite: MATH 160, may be taken concurrently.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ENGR 382A  Study Abroad: Grand Challenges in Engineering--China  Credits: 3 (0-0-3)
Course Description: Faculty-led study abroad program that includes cultural, language, and engineering instruction. Course will be held at a host institution in China.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ENGR 389  Engineering Cooperative Experience  Credit: 1 (0-0-40)
Course Description: Semester-long full-time industry engineering experience in a position relevant to the student's major field.
Prerequisite: None.
Registration Information: Written consent of instructor. May be taken up to 9 times.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ENGR 486  Practicum  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ENGR 496  Group Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.
ENGR 498 Undergraduate Research  Credits: Var[1-3] (0-0-0)
Course Description: Directed undergraduate research with a faculty mentor.
Prerequisite: None.
Registration Information: 30 credits in engineering and/or science; written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 501 Foundations of Systems Engineering  Credits: 3 (3-0-0)
Course Description: Functional components of systems engineering, application of systems engineering to practical problems, system life-cycle process.
Prerequisite: None.
Registration Information: Credit not allowed for both ECE 501 and ENGR 501. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 508 Introduction to Power System Markets  Credits: 3 (3-0-0)
Also Offered As: ECE 508.
Course Description: Deregulated electrical power systems, system security, investments in generation and transmission, ancillary services, and nodal pricing.
Prerequisite: ECE 461.
Registration Information: Credit not allowed for both ENGR 508 and ECE 508. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 509 Signal Processing for Power Systems  Credits: 3 (3-0-0)
Also Offered As: ECE 509.
Course Description: Signal processing tools for analyzing power systems, voltage frequency, magnitude variations, unbalance, waveform distortion.
Prerequisite: ECE 312 and ECE 461.
Registration Information: Credit not allowed for both ENGR 509 and ECE 509. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 510 Engineering Optimization: Method/Application  Credits: 3 (3-0-0)
Course Description: Optimization methods; linear programming, network flows, integer programming, interior point methods, quadratic programming, engineering applications.
Prerequisite: MATH 261 and MATH 229.
Registration Information: Credit not allowed for both ENGR 510 and MATH 510. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 520 Engineering Decision Support/Expert Systems  Credits: 3 (3-0-0)
Course Description: Decision support systems for complex engineering problems; multicriteria decision making and optimization; hybrid knowledge-based/algorithmic methods.
Prerequisite: ENGR 510 or MATH 510.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 522 Object-Oriented GIS Programming for Engineers  Credits: 3 (3-0-0)
Course Description: Object-oriented GIS programming with C# & .NET framework; integration of GIS libraries; development of custom desktop GIS applications in engineering.
Prerequisite: CIVE 577.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 530 Overview of Systems Engineering Processes  Credits: 3 (3-0-0)
Course Description: Systems engineering life-cycle process and analysis techniques. Reliability and robustness.
Prerequisite: ECE 303 or STAT 303 or STAT 315.
Registration Information: Credit not allowed for both ECE 530 and ENGR 530. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 531 Engineering Risk Analysis  Credits: 3 (3-0-0)
Course Description: Estimation and risk identification, development of mitigation techniques.
Prerequisite: ECE 303 or STAT 303 or STAT 315.
Registration Information: Credit not allowed for both ECE 531 and ENGR 531. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 532 Dynamics of Complex Engineering Systems  Credits: 3 (3-0-0)
Also Offered As: ECE 532.
Course Description: Higher-level behavior and issues that emerge from interaction between components in complex socio-technical systems.
Prerequisite: ENGR 501, may be taken concurrently or ECE 501, may be taken concurrently.
Registration Information: Credit not allowed for both ENGR 532 and ECE 532. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ENGR 550  Numerical Methods in Science and Engineering  Credits: 3 (3-0-0)
Also Offered As: MATH 550.
Course Description: Finite elements, finite differences, spectral methods, method of lines, conservation laws; stability and convergence analysis for PDEs.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Registration Information: Credit not allowed for both ENGR 550 and MATH 550.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 565  Electrical Power Engineering  Credits: 3 (3-0-0)
Also Offered As: ECE 565.
Course Description: Analysis of power systems in terms of current, voltage, and active/reactive power; introduction of computer-aided tools for power systems.
Prerequisite: ECE 332 and ECE 342.
Registration Information: Credit not allowed for both ENGR 565 and ECE 565. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 567  Systems Engineering Architecture  Credits: 3 (3-0-0)
Course Description: Observation/classification of systems architecture. Systems architecture principles and critical evaluation through design studies.
Prerequisite: ECE 501 or ENGR 501.
Registration Information: Credit not allowed for both ECE 567 and ENGR 567. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 568  Electrical Energy Generation Systems  Credits: 3 (3-0-0)
Also Offered As: ECE 568.
Course Description: Energy systems: renewable and traditional. Physics and operation of energy devices; solar-photovoltaic, wind energy, gas, coal and nuclear plants.
Prerequisite: None.
Registration Information: Written consent of instructor. Credit not allowed for both ENGR 568 and ECE 568. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 597  Group Study in Systems Engineering  Credits: 3 (0-0-3)
Course Description: Capstone study experience in systems engineering.
Prerequisite: (CIS 600) and (ENGR 530 or ECE 530) and (ENGR 531 or ECE 531).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 601  Bioenergy Technology  Credits: 3 (2-2-0)
Course Description: Science and engineering aspects of bioenergy production, including plant biology, fermentation, and biofuel properties.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ENGR 601 and AGRI 601. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 621  Energy Storage for Electrical Power Systems  Credits: 3 (3-0-0)
Also Offered As: ECE 621.
Course Description: Physics and operations of electrical, mechanical, thermal, and novel energy storage systems/devices.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Credit not allowed for both ENGR 621 and ECE 621. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 622  Energy Networks and Power Distribution Grids  Credits: 3 (3-0-0)
Also Offered As: ECE 622.
Course Description: Energy networks: generation, storage, consumers. Systems approach to analysis of distribution networks and transition to intelligent grid systems.
Prerequisite: (ECE 411 or MECH 417) and (ECE 565 or ENGR 565).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for ENGR 622 and ECE 622.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 623  Electric Power Quality  Credits: 3 (3-0-0)
Also Offered As: ECE 623.
Course Description: Interconnecting power electronic devices and renewable energy sources to power systems.
Prerequisite: ECE 461 or ECE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ENGR 623 and ECE 623.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 601  Bioenergy Technology  Credits: 3 (2-2-0)
Course Description: Science and engineering aspects of bioenergy production, including plant biology, fermentation, and biofuel properties.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ENGR 601 and AGRI 601. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 621  Energy Storage for Electrical Power Systems  Credits: 3 (3-0-0)
Also Offered As: ECE 621.
Course Description: Physics and operations of electrical, mechanical, thermal, and novel energy storage systems/devices.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Credit not allowed for both ENGR 621 and ECE 621. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 622  Energy Networks and Power Distribution Grids  Credits: 3 (3-0-0)
Also Offered As: ECE 622.
Course Description: Energy networks: generation, storage, consumers. Systems approach to analysis of distribution networks and transition to intelligent grid systems.
Prerequisite: (ECE 411 or MECH 417) and (ECE 565 or ENGR 565).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for ENGR 622 and ECE 622.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 623  Electric Power Quality  Credits: 3 (3-0-0)
Also Offered As: ECE 623.
Course Description: Interconnecting power electronic devices and renewable energy sources to power systems.
Prerequisite: ECE 461 or ECE 562.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ENGR 623 and ECE 623.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ENGR 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ENGR 697  Group Study  Credits: Var[1-6] (0-0-0)
Also Offered As: ECE 697.
Course Description:*
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both ENGR 697 and ECE 697.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ENGR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:*
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ENGR 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:*
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
ENGR 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:*
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

English-Academic Purposes—EAP (EAP)

Courses
EAP 150 English for International Students I Credits: 6 (6-0-0)
Course Description: Academic English for international students, emphasizing analysis and integration of text and lecture-based information and its application.
Prerequisite: None.
Registration Information: Admission to Pathways program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EAP 151 English for International Students II Credits: 3 (3-0-0)
Course Description: Academic English for international students, emphasizing research and writing papers in various academic genres using appropriate academic language.
Prerequisite: EAP 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EAP 152 English for International Graduate Students Credits: 6 (6-0-0)
Course Description: Academic English for international graduate students with emphasis on both academic reading and research.
Prerequisite: EAP 150.
Registration Information: Admission to graduate INTO CSU Pathway Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
EAP 153 Writing for International Graduate Students Credits: 3 (3-0-0)
Course Description: Development of academic English for international graduate students with an emphasis on academic research writing.
Prerequisite: None.
Registration Information: Admission to an accelerated graduate INTO CSU Pathway Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

English-E (E)

Courses
E 140 The Study of Literature (GT-AH2) Credits: 3 (3-0-0)
Course Description: Basic principles of reading literary texts.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).
E 142 Reading Without Borders (GT-AH2) Credits: 3 (3-0-0)
Course Description: Authors from a range of international, cross-national, cultural, and ethnic backgrounds focusing on themes of immigration, exile, or education.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Literature & Humanities (GT-AH2).
E 179 Western American Literature Credits: 3 (3-0-0)
Course Description: Trans-Mississippi West in fiction and other literary forms.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 210 Beginning Creative Writing Credits: 3 (3-0-0)
Course Description: Basic techniques of writing fiction and poetry; may include some elements of drama.
Prerequisite: E 100 to 281 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 232 Introduction to Humanities (GT-AH2) Credits: 3 (3-0-0)
Course Description: Great literature of Western cultural tradition from ancient times to present.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 234 Introduction to Native American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both E 234 and ETST 234.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 236 Short Fiction Credits: 3 (3-0-0)
Course Description: Examines form, technique and interpretation in short fiction.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

E 237 Introduction to Science Fiction Credits: 3 (3-0-0)
Course Description: Historical development and major themes of science fiction, featuring writers such as Wells, Huxley, Bradbury, and LeGuin.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 238 20th-Century Fiction (GT-AH2) Credits: 3 (3-0-0)
Course Description: 20th-century fiction chosen for its relevance to global and cultural awareness.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Literature & Humanities (GT-AH2).

E 239 Introduction to Chicano Literature Credits: 3 (3-0-0)
Also Offered As: ETST 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both E 239 and ETST 239.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 240 Introduction to Poetry Credits: 3 (3-0-0)
Course Description: Development of critical skills necessary to understand and enjoy poetry.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 242 Reading Shakespeare (GT-AH2) Credits: 3 (3-0-0)
Course Description: Reading of Shakespeare texts, using various approaches of interpretation for understanding and relation to our contemporary cultural situation.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 245 World Drama (GT-AH2) Credits: 3 (3-0-0)
Course Description: World drama in cultural contexts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 246 American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: AMST 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both E 300 and AMST 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 270 Introduction to American Literature (GT-AH2) Credits: 3 (3-0-0)
Course Description: History and development of American writings from 16th-century travel narratives through early 20th-century modernism.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Literature & Humanities (GT-AH2).

E 276 Survey of British Literature I (GT-AH2) Credits: 3 (3-0-0)
Course Description: British literature from Beowulf through the 18th century in relation to its historical contexts.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 277 Survey of British Literature II (GT-AH2) Credits: 3 (3-0-0)
Course Description: British literature from the Romantics to the present in relation to its historical contexts.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

E 300 American Lives-Methods in American Studies Credits: 3 (3-0-0)
Also Offered As: AMST 300.
Course Description: Methods and changing approaches of American studies since 1950s using autobiography as organizing theme.
Prerequisite: AMST 100 and AMST 101.
Registration Information: Credit not allowed for both E 300 and AMST 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 302  Reading and the Web  Credits: 3 (3-0-0)
Course Description: Critical examination of reading processes, as well as the rhetorical and cultural contexts of readers on the web.
Prerequisite: CO 150 or HONR 193.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 305  Principles of Writing and Rhetoric  Credits: 3 (3-0-0)
Course Description: Humanities-based exploration of central principles of rhetoric in written communication.
Prerequisite: CO 300 or CO 301A to 301D - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 311A  Intermediate Creative Writing: Fiction  Credits: 3 (3-0-0)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: E 210 with a minimum grade of B.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 311B  Intermediate Creative Writing: Poetry  Credits: 3 (3-0-0)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: E 210 with a minimum grade of B.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 311C  Intermediate Creative Writing: Nonfiction  Credits: 3 (3-0-0)
Course Description: Group discussion of student writing, literary models, and theory; emphasis on developing individual style.
Prerequisite: (CO 150 or HONR 193) and (E 210 with a minimum grade of B or JTC 210).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 320  Introduction to the Study of Language  Credits: 3 (3-0-0)
Course Description: Varied topics covering general linguistics or the relationships between language and literature or society and science.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 322  English Language for Teachers I  Credits: 3 (3-0-0)
Course Description: Foundations of language structure, emphasizing grammar, sounds, spelling, word structure, linguistic variation, usage, acquisition, and pedagogy.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 323  English Language for Teachers II  Credits: 3 (3-0-0)
Course Description: Advanced grammar; language history; meaning; applications to teaching composition, reading, and literature.
Prerequisite: E 322.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 324  Teaching English as a Second Language  Credits: 3 (3-0-0)
Course Description: Introduction to teaching English to speakers of other languages for teacher certification candidates and for those wanting to teach abroad.
Prerequisite: E 320 or E 322.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 326  Development of the English Language  Credits: 3 (3-0-0)
Course Description: Chronological study of four historical stages of English (Old, Middle, Early Modern, Modern) with emphasis on grammar, vocabulary, and phonology.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 327  Syntax and Semantics  Credits: 3 (3-0-0)
Course Description: Linguistic study of sentence structure and grammatical relations, semantic roles and representation.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 328  Phonology, Morphology, and Lexis  Credits: 3 (3-0-0)
Course Description: Linguistic study of pronunciation, word-formation, and vocabulary.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 329  Pragmatics and Discourse Analysis  Credits: 3 (3-0-0)
Course Description: Linguistic study of general principles of interpretation and textual patterns.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 330  Gender in World Literature  Credits: 3 (3-0-0)
Course Description: Selected world literature ranging from ancient world to present, considered in light of various complexities of gender relations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 331  Early Women Writers  Credits: 3 (3-0-0)
Course Description: Selected women writers from any period before the 20th century.
Prerequisite: E 276 or E 277.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 332  Modern Women Writers  Credits: 3 (3-0-0)
Course Description: Selected 20th-century women writers in variety of genres emphasizing relationships between gender, writing, and reading.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 333 Critical Studies of Popular Texts Credits: 3 (3-0-0)
Course Description: Texts representing one or more popular modes focusing on issues of gender, sexuality, racial or ethnic identity, technology, and colonialism.
Prerequisite: CO 150.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 334 Gay and Lesbian Literature Credits: 3 (3-0-0)
Course Description: Literature by gay and lesbian authors on gay and lesbian themes.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 337 Western Mythology Credits: 3 (3-0-0)
Course Description: Major themes in western myth: classical, Biblical, and Germanic.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 338 Ethnic Literature in the United States Credits: 3 (3-0-0)
Course Description: Comparative study of literatures from a range of U.S. ethnic experiences and perspectives.
Prerequisite: ETST 100 to 481 - at least 1 course or E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 339 Literature of the Earth Credits: 3 (3-0-0)
Course Description: Non-fiction, fiction, and poetry on landscape, climate, animality, ecology, place.
Prerequisite: CO 150.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 340 Literature and Film Studies Credits: 3 (3-0-0)
Course Description: Studies film adaptations of literary works with attention to narrative, style, theme, adaptation, and revision.
Prerequisite: E 100 to 499.
Registration Information: Freshman not allowed.
Grade Mode: Traditional.
Special Course Fee: No.

E 341 Literary Criticism and Theory Credits: 3 (3-0-0)
Course Description: Theory and practice of modern literary analysis and evaluation; writing about literature.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 342 Shakespeare I Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist from the early plays through Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 343 Shakespeare II Credits: 3 (3-0-0)
Course Description: Shakespeare's development as a poet and dramatist after Hamlet.
Prerequisite: E 240 or E 276.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 345 American Drama Credits: 3 (3-0-0)
Course Description: Representative examples from mainstream and alternative drama.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 350 The Gothic in Literature and Film Credits: 3 (3-0-0)
Course Description: Interdisciplinary, cross-cultural approach to gothic works from the 18th to the 20th centuries.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 356 Asian Literature Credits: 3 (3-0-0)
Course Description: Masterpieces of classical and contemporary literature of China, India, and Japan.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 370 American Literature in Cultural Contexts Credits: 3 (3-0-0)
Course Description: American literature in social, political, economic, aesthetic, intellectual, and multimedia contexts.
Prerequisite: E 270.
Registration Information: May be taken twice for a maximum of 6 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 382A Study Abroad: Reading and Writing the Zambia Experience Credits: 3 (0-0-3)
Course Description: Community education and health initiatives in Livingstone, Zambia, in the context of fiction and nonfiction about such development work.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
E 384A  Supervised College Teaching: Classroom  Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 384B  Supervised College Teaching: Writing Center  Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Registration Information: Written consent of department chair. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 401  Teaching Reading  Credits: 3 (3-0-0)
Course Description: Theory and pedagogy for understanding, interpreting, and evaluating print and visual texts.
Prerequisite: CO 301D.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 402  Teaching Composition  Credits: 3 (3-0-0)
Course Description: Theory and practice of the analysis and the teaching of writing.
Prerequisite: CO 301A to 301D - at least 1 course.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 403  Writing the Environment  Credits: 3 (3-0-0)
Course Description: Creative writing in conjunction with study of recent American literature on nature and landscape.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or CO 301A to 301D - at least 1 course or E 311A to 311C - at least 1 course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 405  Adolescents' Literature  Credits: 3 (3-0-0)
Course Description: Survey of literature for adolescents emphasizing development of critical ability, appreciation, and taste.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 406  Topics in Literacy  Credits: 3 (3-0-0)
Course Description: Exploring literacy through writing theory; specific issues of cultural difference, gender, technology, acquisition, school, and workplace.
Prerequisite: None.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 412A  Creative Writing Workshop: Fiction  Credits: 3 (3-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311A with a minimum grade of B.
Registration Information: Maximum of 6 credits allowed in course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 412B  Creative Writing Workshop: Poetry  Credits: 3 (3-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311A with a minimum grade of B.
Registration Information: Maximum of 6 credits allowed in course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 412C  Creative Writing Workshop: Nonfiction  Credits: 3 (3-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: E 311A with a minimum grade of B or E 311C with a minimum grade of B.
Registration Information: Maximum of 6 credits allowed in course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 420  Beat Generation Writing  Credits: 3 (3-0-0)
Course Description: Shared experiences and historical pressures that made Beat Generation writers, including Kerouac, Ginsberg, Burroughs, and Waldman, a countercultural movement.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or CO 301A to 301D - at least 1 course or E 311A to 311C - at least 1 course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 421  Asian-American Literature  Credits: 3 (3-0-0)
Course Description: Asian American writing on immigration, exile, exclusion, detainment, neocolonialism, resistance, hybridity, and transnationalism.
Prerequisite: CO 150 and E 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 422 African-American Literature Credits: 3 (3-0-0)
Also Offered As: ETST 422.
Prerequisite: None.
Course Description: African-American literature as a distinct tradition of writing and protest.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 423 Latino/a Literature Credits: 3 (3-0-0)
Course Description: Latino/a writing on themes of settlement, expropriation, resistance, conquest, immigration, exile, hybridity and transnationalism.
Prerequisite: CO 150 and E 270.
Special Course Fee: No.

E 424 English Renaissance Credits: 3 (3-0-0)
Course Description: English Renaissance literature (1500-1670) covering a range of poetry, drama, and prose.
Prerequisite: E 276 or E 342 or E 343.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 425 Restoration and 18th Century Literature Credits: 3 (3-0-0)
Course Description: Poetry, drama, and prose, 1600-1789.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

E 426 British Romanticism Credits: 3 (3-0-0)
Course Description: British Romantic era literature (1780-1830) with emphasis on the social and cultural context.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 427 Victorian Age Credits: 3 (3-0-0)
Course Description: Victorian era literature (1830-1900) in social and cultural context with attention to multiple genres (poetry, fiction, drama, and essay).
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 428 Postcolonial Literature Credits: 3 (3-0-0)
Course Description: Selected readings in postcolonial literatures and theory.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 430 18th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction from Defoe to Austen stressing Richardson, Fielding, Smollett, and Sterne.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 431 19th-Century English Fiction Credits: 3 (3-0-0)
Course Description: English fiction in Victorian and Edwardian eras emphasizing Dickens, the Brontes, Thackeray, George Eliot, and Hardy.
Prerequisite: E 276 or E 277 or E 341.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 432 20th-Century British Fiction Credits: 3 (3-0-0)
Course Description: British fiction from Conrad to the present emphasizing Joyce, Lawrence, Forster, Woolf, and Beckett.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 433 Literatures of the American West Credits: 3 (3-0-0)
Course Description: Relationships between places, environments, cultures, and literature in the American West.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356 or HIST 351 or HIST 352 or HIST 353.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 436 American Fiction, 1945-Present Credits: 3 (3-0-0)
Course Description: Form, content, and context of American fiction from 1945 to present. Kesey, Updike, Heller, Pynchon, Barthes, Vonnegut, and others.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 438 Native American Literature  Credits: 3 (3-0-0)
Also Offered As: ETST 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both E 438 and ETST 438.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 440 American Prose Before 1900  Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. before 1900.
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 441 American Prose Since 1900  Credits: 3 (3-0-0)
Course Description: Novels, stories, and/or literary non-fiction prose written in the U.S. from 1900 to the present.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

E 442 European Drama  Credits: 3 (3-0-0)
Course Description: Major plays and dramatic issues from 1660 to 1780 including Dryden, Etherege, Congreve, Sheridan, and others.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 445 Modern British and European Drama  Credits: 3 (3-0-0)
Course Description: Realism and anti-realism in modern British and European drama.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 452 Masterpieces of European Literature  Credits: 3 (3-0-0)
Course Description: Selected works of European literature through the 19th century.
Prerequisite: E 140 or E 160 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 455 European Literature after 1900  Credits: 3 (3-0-0)
Course Description: Continental European texts in translation since 1900.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 356.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 456 Topics in Critical Theory  Credits: 3 (3-0-0)
Course Description: Advanced study of literary and cultural theory.
Prerequisite: None.
Registration Information: May be repeated once for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 460 Chaucer  Credits: 3 (3-0-0)
Course Description: Chaucer's works in medieval context.
Prerequisite: E 341.
Registration Information: One other upper-division E prefix course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 463 Milton  Credits: 3 (3-0-0)
Course Description: Milton's poetry and prose emphasizing Paradise Lost.
Prerequisite: E 341 and E 276.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 465 Topics in Literature and Language  Credits: 3 (3-0-0)
Course Description: Selected issues in literature and language.
Prerequisite: None.
Registration Information: One other upper-division E prefix course.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 470 Individual Author  Credits: 3 (3-0-0)
Course Description: Intensive study of works of a single major author.
Prerequisite: None.
Registration Information: One other upper-division E prefix course.
Maximum of 6 credits allowed in course.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 475  American Poetry Before 1900  Credits: 3 (3-0-0)  
Course Description: Major American poets through the nineteenth century including Whitman, Dickinson, and Frost.  
Prerequisite: E 240.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 478  Modern Poetry  Credits: 3 (3-0-0)  
Course Description: Major British and American poets from late 19th century to World War II.  
Prerequisite: E 240.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 479  Recent Poetry of the United States  Credits: 3 (3-0-0)  
Course Description: US poetry since World War II, emphasis on the 1980s through the present.  
Prerequisite: E 240.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

E 487A  Internship: Supervised Work Experience  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

E 487B  Internship: Literary Editing  Credit: 1 (0-0-1)  
Course Description:  
Prerequisite: None.  
Registration Information: 2.5 GPA. Written consent of department chair. Maximum of 4 credits allowed in E 487A and E 487B.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.  

E 487C  Internship: Community Literacy Center  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: CO 150.  
Registration Information: 2.500 GPA. Written consent of CLC director.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

E 487D  Internship: CSU Writing Center  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: CO 300 or CO 301.  
Registration Information: 2.500 GPA. Written consent of Writing Center director.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

E 495  Independent Study  Credits: Var[1-3] (0-0-0)  
Course Description: Individually guided studies in literature, writing, English language, and linguistics.  
Prerequisite: None.  
Registration Information: Maximum of 6 credits allowed in course.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

E 501  Theories of Writing  Credits: 3 (3-0-0)  
Course Description: Theoretical approaches to the nature of the composing process.  
Prerequisite: E 402.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 502  Language, Literacy, and Learning  Credits: 3 (3-0-0)  
Course Description: Theoretical and practical perspectives on language and learning skills necessary for basic academic reading and writing.  
Prerequisite: E 300 to 481 - at least 3 credits or EDUC 300 to 481 - at least 3 credits or EDCT 300 to 481 - at least 3 credits.  
Registration Information: Teaching experience or 3 credits in upper-division English or education courses.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

E 503  Investigating Classroom Literacies  Credits: 3 (3-0-0)  
Course Description: Research methods and ethical issues in classroom-based inquiry into oral and written literacy practices.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

E 504  Situating Composition Studies  Credits: 3 (3-0-0)  
Course Description: Contexts for composition programs, roles for program administrators, and professional opportunities for teachers and scholars.  
Prerequisite: E 501.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

E 505A  Major Authors: English  Credits: 3 (3-0-0)  
Course Description: Intensive study of the works of one or two major authors.  
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.
E 505B Major Authors: American Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 505C Major Authors: World Credits: 3 (3-0-0)
Course Description: Intensive study of the works of one or two major authors.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506A Literature Survey: English Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506B Literature Survey: American Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 506C Literature Survey: Comparative Credits: 3 (3-0-0)
Course Description: Synthesis of literary attitudes, modes, genres of an age.
Prerequisite: E 140 or E 356 or E 179 or E 232 or E 234 or ETST 234 or E 235 or E 237 or E 238 or E 239 or ETST 239 or E 240 or E 242 or E 245 or E 247 or E 270 or E 276 or E 277 or E 330 or E 332 or E 334 or E 335 or E 336 or E 337 or E 342 or E 343 or E 345 or E 160.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 507 Special Topics in Linguistics Credits: 3 (3-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513A Form and Technique in Modern Literature: Fiction Credits: 3 (3-0-0)
Course Description: Selected readings in and discussion of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513B Form and Technique in Modern Literature: Poetry Credits: 3 (3-0-0)
Course Description: Selected readings in and discussions of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 513C Form and Technique in Modern Literature: Essay Credits: 3 (3-0-0)
Course Description: Selected readings in and discussions of modern literature and criticism from the writer's point of view with emphasis on form and technique.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 514 Phonology/Morphology-ESL/EFL Credits: 3 (3-0-0)
Course Description: English sound system and word formation in relation to second language acquisition and teaching.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 515 Syntax for ESL/EFL Credits: 3 (3-0-0)
Course Description: Major grammatical structures of English in relation to second language acquisition and teaching.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 519 English Phonetics and Phonology Credits: 3 (3-0-0)
Course Description: Articulatory phonetics, phonological theory and analysis with principal applications to American English and to pedagogy.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 520 English Phonetics and Phonology Credits: 3 (3-0-0)
Course Description: Linguistic study of literal and nonliteral meaning, including role of textual and situational context.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
E 526 Teaching English as a Foreign/Second Language Credits: 3 (3-0-0)
Course Description: Principles of teaching English as a foreign/second language. Development of a coherent method, including activities, materials, and course design.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 527 Theories of Foreign/Second Language Learning Credits: 3 (3-0-0)
Course Description: Theories of second language learning/acquisition; emphasis on psycholinguistic processes of language learning.
Prerequisite: E 526.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 528 Professional ESL Teaching: Theory to Practice Credits: 3 (3-0-0)
Course Description: Theory and practice in the planning and teaching of English as a second/foreign language.
Prerequisite: E 514 and E 515 and E 527.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 590 Workshop in TESOL Credits: Var[1-3] (0-0-0)
Course Description: Methodology/linguistic theory designed to solve practical problems in teaching, testing, and materials development.
Prerequisite: E 526.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 600A Research Methods/Theory: Literary Scholarship Credits: 3 (3-0-0)
Course Description: Research methods in English studies: literary scholarship.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 600B Research Methods/Theory: Design Credits: 3 (3-0-0)
Course Description: Research methods in English studies: research design with quantitative and qualitative methods.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 601 Research in Teaching English as Second Language Credits: Var[2-3] (0-0-0)
Course Description: Evaluation and design of research in language acquisition.
Prerequisite: E 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 603 Computers and Composition Credits: 3 (3-0-0)
Course Description: Relationship of computer-assisted instruction to rhetoric and composition.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 605 Reading/Writing Connection Credits: 3 (3-0-0)
Course Description: Theoretical understanding of reading and writing processes; practical implications for professional writers and teachers of writing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 607A Teaching Writing: Creative Writing Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 607B Teaching Writing: Composition and Rhetoric Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 608 Integrating Writing in the Academic Core Credit: 1 (0-0-1)
Course Description: Theories and best practices associated with writing integration in the academic core.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 615 Reading Literature-Recent Theories Credits: 3 (3-0-0)
Course Description: Recent developments in critical and cultural theories of discourse.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

E 630A Special Topics in Literature: Area Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 630B Special Topics in Literature: Genre Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 630C Special Topics in Literature: Theory and Technique Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 630D Special Topics in Literature: Gender Studies Credits: 3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 631 Crossing Boundaries Credits: 3 (3-0-0)
Course Description: Cross-topical studies of literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 632 Professional Concerns in English Credits: Var[1-3] (0-0-0)
Course Description: Professional concerns of secondary school teachers of English.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
E 633 Special Topics in Discourse Studies Credits: 3 (3-0-0)
Course Description: Varied topics covering cultural or historical areas, or literacy and discourse theory and practice, or professional pedagogical issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
E 634 Special Topics in TEFL/TESL Credits: 3 (3-0-0)
Course Description: Teaching English as a foreign or second language.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 635 Critical Studies in Literature and Culture Credits: 3 (3-0-0)
Course Description: Advanced interpretation in contemporary literary and critical studies.
Prerequisite: E 615.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 636 Environmental Literature and Criticism Credits: 3 (3-0-0)
Course Description: Literary, critical, and theoretical representations of nature, animals, human-environment relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 637 History of Writing Credits: 3 (3-0-0)
Course Description: Writing systems and practices across time, cultures, and varied constructions of author, text, audience, social context, technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 638 Assessment of English Language Learners Credits: 3 (3-0-0)
Course Description: Theory, practice, and professional conduct in the assessment of English language learners.
Prerequisite: E 514 and E 527.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 640A Graduate Writing Workshop: Fiction Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 640B Graduate Writing Workshop: Poetry Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 640C Graduate Writing Workshop: Essay Credits: Var[1-5] (0-0-0)
Course Description: Individual projects with group discussion and analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 11 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
E 641  Nonfiction Workshop  Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring various areas within literary nonfiction.
Prerequisite: E 640C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 642  Writing Hypertexts  Credits: Var[1-5] (0-0-0)
Course Description: Writing workshop exploring development of texts in electronic formats.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 679  Community Service Learning in TESOL  Credit: 1 (1-0-0)
Course Description: Opportunities to learn, practice, and develop skills by serving the community.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 684A  Supervised College Teaching: Composition  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684B  Supervised College Teaching: ESL  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684C  Supervised College Teaching: Creative Writing  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684D  Supervised College Teaching: Literature  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 684E  Supervised College Teaching: Computer-Assisted Instruction  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687A  Internship: Teaching College English  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687B  Internship: Composition Supervision/Administration  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: E 501 and E 684A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687C  Internship: Literary Editing  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 687E  Internship: Teaching ESL, K-12  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687H  Internship: ESL-Adult Learning  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687I  Internship: ESL-Supervision/Administration  Credits: Var[1-5] (0-0-0)
Course Description:  
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
E 687J Internship: Arts Administration in Literature Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 688K Internship: Public Education Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687L Internship: Computers and Writing Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 687M Internship: Writing/Editing for Specific Purposes Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 692 Rhetoric and Composition Seminar Credit: 1 (0-0-1)
Course Description: Forum for faculty and student work in progress.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 694 Independent Study: Portfolio Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 698 Research: Project Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

E 700 Introduction to Doctoral Studies in English Credits: 3 (0-0-3)
Course Description: Disciplinary approaches to the study of written discourse.
Prerequisite: None.
Registration Information: Admission to the doctoral program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

E 710 Writing for Publication Credits: 3 (3-0-0)
Course Description: Shaping research questions, determining publication venues, writing and revising for publication.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792A Seminar: New Literacies Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792B Seminar: Writing About Science and Environment Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 792C Seminar: Writing and Cultural Contexts Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

E 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Individually guided study in doctoral topic.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

E 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
Courses

ERHS 174 Freshman Scholar Credit: 1 (1-0-0)
Course Description: Scholarship-supported exploration of biomedical research theory and practice.
Prerequisite: None.
Registration Information: Admission to CVMBS Freshman Scholar's Program required. Up to 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 192 Environmental Health First Year Seminar Credit: 1 (1-0-0)
Course Description: Introduction to biosciences, college life, learning skills, problem solving, and degree planning.
Prerequisite: None.
Registration Information: Freshman standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 210 Cancer Biology, Medicine, and Society Credits: 2 (2-0-0)
Course Description: A broad overview of cancer biology and cancer medicine.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 220 Environmental Health Credits: 2 (2-0-0)
Course Description: Impact of people on the physical and biological environment as well as impact of the environment on people; emphasis placed on human health.
Prerequisite: BZ 101, may be taken concurrently or BZ 104, may be taken concurrently or BZ 110, may be taken concurrently or BZ 120, may be taken concurrently or LIFE 102, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 230 Environmental Health Field Methods Credits: 3 (0-6-0)
Course Description: Field and laboratory techniques necessary for practice of environmental health.
Prerequisite: CHEM 113 with a minimum grade of C and CHEM 114 with a minimum grade of C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 320 Environmental Health - Water and Food Safety Credits: 3 (3-0-0)
Course Description: Water quality and food safety for practice of environmental health.
Prerequisite: MIP 300, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 332 Principles of Epidemiology Credits: 3 (3-0-0)
Course Description: Use of epidemiological methods in studying distribution of diseases in human populations.
Prerequisite: (STAT 301, may be taken concurrently or STAT 307, may be taken concurrently) and (MIP 300, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 335 Industrial Hygiene and Air Credits: 3 (3-0-0)
Course Description: Industrial and airborne hazards, disease prevention, hazard control and evaluation.
Prerequisite: (BMS 300 and ERHS 230 and PH 122) and (CHEM 341, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 400 Radiation Safety Credits: 3 (3-0-0)
Course Description: Radiation physics, dosimetry, radiation measurement, emergencies and waste management. Essentials of radiation safety.
Prerequisite: CHEM 112 and ERHS 300 and PH 122.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 405 Fundamentals of Ergonomics Credits: 2 (2-0-0)
Course Description: Basic skills, knowledge, and abilities in ergonomics; focus on musculoskeletal injury prevention.
Prerequisite: None.
Registration Information: One college-level animal biology or anatomy/physiology or engineering design course or concurrent registration.
Offered as an online course only. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 410 Environmental Health and Waste Management Credits: 3 (3-0-0)
Course Description: Recognition of impacts, occupational and environmental, in handling wastes; administrative management for waste programs.
Prerequisite: (CHEM 245, may be taken concurrently or CHEM 343, may be taken concurrently or CHEM 346, may be taken concurrently) and (ERHS 230).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 430 Human Disease and the Environment Credits: 3 (3-0-0)
Course Description: Overview of the human diseases which are associated with the environment.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 446 Environmental Toxicology Credits: 3 (3-0-0)
Course Description: Essentials of environmental toxicology based on problem-oriented discussions addressing environmental impacts of organic/inorganic chemicals.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 448 Environmental Contaminants: Exposure and Fate  Credits: 3 (3-0-0)
Course Description: Pathways of exposure and behavior of environmental contaminants. Exposure assessment in environmental health protection.
Prerequisite: (CHEM 245 or CHEM 341 or CHEM 345) and (LIFE 102).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 450 Introduction to Radiation Biology  Credits: 3 (3-0-0)
Course Description: Genetic and somatic effects of radiation on cells, tissues, and the whole organism; tumor therapy; carcinogenesis; risks vs. benefits of radiation.
Prerequisite: LIFE 102 and PH 122, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 479 Environmental Health Practice  Credit: 1 (0-0-1)
Course Description: Networking, preparation of resume and statement of qualifications for professional internship or employment.
Prerequisite: ERHS 230, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial-semester course.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 487 Internship-Environmental Health  Credits: Var[4-7] (0-0-0)
Course Description: Professional field practice in environmental health with a public or private sector agency.
Prerequisite: ERHS 230.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 494 Independent Study in Environmental Health  Credits: Var[1-18] (0-0-0)
Course Description: Directed independent study or project under faculty guidance.
Prerequisite: ERHS 220.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 498 Research  Credits: Var[1-4] (0-0-0)
Course Description: Research in environmental and radiological health sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 502 Fundamentals of Toxicology  Credits: 3 (3-0-0)
Course Description: Fundamental principles of toxicology; dose-response, organ targets, toxic agents.
Prerequisite: (BMS 300 or BMS 360) and (CHEM 245 or CHEM 341 or CHEM 345).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 503 Toxicology Principles  Credit: 1 (1-0-0)
Course Description: Principles of toxicology for applications in industrial hygiene and environmental public health.
Prerequisite: CHEM 113 and LIFE 102.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 504 Occupational and Environmental Toxicology  Credits: 2 (2-0-0)
Course Description: Toxic effects of harmful agents found in occupational and environmental settings.
Prerequisite: ERHS 446 or ERHS 502 or ERHS 503, may be taken concurrently.
Registration Information: This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 505 Epidemiologic Research  Credit: 1 (1-0-0)
Course Description: Professional skills and knowledge regarding topics in the epidemiologic research process.
Prerequisite: ERHS 532, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 507A Toxicology Toolbox: Fundamentals  Credit: 1 (1-0-0)
Course Description: Qualitative description of toxicant molecules relevant to their behavior in biological systems and the environment. Quantitative characterization of toxicant concentrations (dose) and how they change with time (toxicokinetics).
Prerequisite: ERHS 446, may be taken concurrently or ERHS 448, may be taken concurrently or ERHS 502, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 510 Cancer Biology  Credits: 3 (3-0-0)
Course Description: Cancer biology, from epidemiology and classification, through the molecular basis of the phenotypes to detection and treatment.
Prerequisite: BC 351 or BC 403, may be taken concurrently or BZ 310 or CM 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 515 Non-Ionizing Radiation Safety  Credits: 2 (2-0-0)
Course Description: Evaluation and safe use of non-ionizing radiation sources. Calculation of safe distances for exposure and maximum permissible exposures.
Prerequisite: (CHEM 107 or CHEM 113) and (MATH 118) and (PH 122 or PH 142).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 520 Environmental and Occupational Health Issues Credits: 3 (3-0-0)
Course Description: Issues in environmental and occupational health sciences in the context of public health and regulatory concerns.
Prerequisite: BZ 110 or CHEM 103 or CHEM 107 or CHEM 111 or ERHS 220 or LIFE 102.
Registration Information: Admission to the Master of Public Health program can be substituted for LIFE 102.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 526 Industrial Hygiene Credits: 3 (3-0-0)
Course Description: Theory and application of industrial hygiene principles to management of the occupational environment.
Prerequisite: ERHS 526, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 527 Industrial Hygiene Laboratory Credit: 1 (0-3-0)
Course Description: Industrial hygiene field monitoring equipment and techniques.
Prerequisite: ERHS 526, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 528 Occupational Safety Credits: 3 (3-0-0)
Course Description: Introduction to occupational safety hazard recognition and control.
Prerequisite: ERHS 446 or ERHS 526.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 530 Radiological Physics and Dosimetry I Credits: 3 (3-0-0)
Course Description: Theory and detection of ionizing radiation; measurement and calculation of exposure and dose.
Prerequisite: ERHS 530, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 531 Nuclear Instruments and Measurements Credits: 2 (1-3-0)
Course Description: Instrument systems for measurements and identification of ionizing radiations.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 532 Epidemiologic Methods Credits: 3 (2-0-1)
Course Description: Method of epidemiologic investigation and study design. Applications to disease control with literature examples.
Prerequisite: ERHS 307 or STAT 307.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 534 SAS and Epidemiologic Data Management Credits: 3 (3-0-0)
Course Description: Basic concepts and skills necessary for data management and analyses using SAS programming in epidemiology studies.
Prerequisite: None.
Registration Information: Graduate standing in Environmental Health.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 535 R Programming for Research Credits: 3 (2-2-0)
Course Description: In-depth instruction on data collection, data management, programming, and visualization, using data examples relevant to academic research. Taught using the statistical programming language R, but the principles will be translatable to other programming languages (e.g., Python, Matlab, SAS). Conducting reproducible research in R and how to construct custom functions and bundle these in a shareable R package.
Prerequisite: None.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 536 Advanced Occupational Health Credits: 3 (3-0-0)
Course Description: Advanced topics in occupational health emphasizing contemporary issues, topics, trends, and problems in the field of industrial hygiene.
Prerequisite: ERHS 446 or ERHS 526.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 538 Geographic Information Systems and Health Credits: 3 (1-3-1)
Course Description: Applications of geographic information systems (GIS) in public health. Topics include geographic theory, spatial data, cartography, data visualization, spatial analysis, geocoding, primary and secondary data acquisition, and application of GIS for epidemiologic analyses.
Prerequisite: ERHS 532.
Registration Information: Must register for lecture, lab, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 540 Principles of Ergonomics Credits: 3 (3-0-0)
Course Description: Theory and practice of ergonomics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 541 Ergonomics in Product and Process Design Credits: 3 (3-0-0)
Course Description: Application of ergonomics to design of products and processes with respect to health, safety, function, and quality.
Prerequisite: ERHS 540.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 542 Biostatistical Methods for Qualitative Data  Credits: 3 (3-0-0)
Course Description: Statistical analysis of categorical data as obtained in epidemiology, toxicology, occupational health, and clinical sciences.
Prerequisite: STAT 301 or ERHS 307 or STAT 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 544 Biostatistical Methods for Quantitative Data  Credits: 3 (3-0-0)
Also Offered As: STAT 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or ERHS 307 or ERHS 307.
Registration Information: Credit not allowed for both ERHS 544 and STAT 544.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 546 Environmental Exposure Assessment  Credits: 2 (2-0-0)
Course Description: Approaches and techniques for quantitative characterization of environmental exposure to harmful agents via inhalation, ingestion, and dermal pathways.
Prerequisite: CHEM 113.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 547 Equipment and Instrumentation  Credits: 3 (0-6-0)
Course Description: Sample collection, quality control, theory and application of equipment and instrumentation for analysis and confirmation of organic-inorganic chemicals.
Prerequisite: ERHS 446 or ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 549 Environmental Health Risk Assessment  Credits: 3 (3-0-0)
Course Description: Environmental contamination and health effects of chemicals using risk assessment, management and communication approaches.
Prerequisite: ERHS 332 or ERHS 446 or ERHS 502 or ERHS 503 or ERHS 532.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 550 Principles of Radiation Biology  Credits: 5 (5-0-0)
Course Description: Dose-response relationships; physical, chemical, and biological modification of radiation damage; radiation oncology; radiation genetics and oncogenesis.
Prerequisite: (BZ 310) and (ERHS 300 or ERHS 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551A Radiation Biology Principles for Medicine: Principles of Radiation Biology  Credits: 2 (2-0-0)
Course Description: Biological responses to radiation exposure; DNA damage and repair, cell killing and survival, carcinogenesis and genetic effects.
Prerequisite: BZ 310.
Registration Information: Credit not allowed for both ERHS 551A and ERHS 550. Offered only online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551B Radiation Biology Principles for Medicine: Principles of Radiation Oncology  Credits: 2 (2-0-0)
Course Description: Application of basic radiation biology to the clinical application of radiation therapy. Radiation sensitivity and tolerance is evaluated based on normal tissue architecture and kinetics. The mechanisms of acute and late radiation effects are elucidated. The impact of time, dose, and fractionation on tumor control and radiation effects are clarified and related to established and newer treatment modalities, including combination therapies and emerging technologies.
Prerequisite: ERHS 551A.
Registration Information: Credit not allowed for both ERHS 551B and ERHS 550. Offered only online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 551C Radiation Biology Principles for Medicine: Principles of Radiation Protection  Credit: 1 (1-0-0)
Course Description: Radiation risk assessment and protection; risk versus benefit associated with environmental and medical exposures.
Prerequisite: ERHS 551B.
Registration Information: Credit not allowed for both ERHS 551C and ERHS 550. Offered only online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 555 Quantitative Methods for Radiation Safety  Credits: 3 (3-0-0)
Course Description: Analytical methods used in health physics, radioecology and radiochemistry. Quantification of uncertainty in radioactive samples and dosimetry.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 556 Monte Carlo Methods in Health Physics  Credits: 3 (3-0-0)
Course Description: Monte Carlo methods for the assessment of complex systems or macroscopic quantities on basis of statistical nature of microscopic components.
Prerequisite: ERHS 530, may be taken concurrently.
Registration Information: Eligibility for access to government software.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 561 Radiation Public Health Credits: 2 (2-0-0)
Course Description: Aspects of radiation public health for students in health physics with emphasis on contemporary issues in radiation protection.
Prerequisite: ERHS 530 and ERHS 550, may be taken concurrently or ERHS 300 and ERHS 400.
Registration Information: ERHS 400 with written consent of instructor or ERHS 530.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 563 Environmental Contaminant Modeling I Credits: 2 (2-0-0)
Course Description: Mathematical modeling of radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: MATH 155.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 565 Chemical and Biological Warfare Agents Credits: 2 (2-0-0)
Course Description: Current understanding of chemical and biological agents used in asymmetric warfare.
Prerequisite: CHEM 245 or CHEM 346.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 566 Forensic Toxicology Credits: 3 (2-2-0)
Course Description: Toxic effects of commonly encountered abused substances and laboratory methods to identify and measure these.
Prerequisite: CHEM 245 or CHEM 343 or CHEM 346.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 567 Cell and Molecular Toxicology Techniques Credits: 3 (0-6-0)
Course Description: Hands-on techniques exposure to molecular toxicology.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 568 Pharmaceutical and Regulatory Toxicology Credits: 3 (3-0-0)
Course Description: Toxicology as applied in public (regulatory) and private (pharmaceutical, industrial) sectors.
Prerequisite: ERHS 502.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

ERHS 569 Immunotoxicology Credits: 3 (2-0-1)
Course Description: Must register for lecture and recitation.
Prerequisite: ERHS 446 and MIP 342 or ERHS 502 or ERHS 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 570 Radioecology Credits: 2 (2-0-0)
Course Description: Environmental transport and exposure assessment of radioactive and other contaminants; estimating risk for human health and ecological impacts.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 595B Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595D Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595E Independent Study: Radiation Physics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595F Independent Study: Dosimetry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595G Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595H Independent Study: Radiation Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595I Independent Study: Radiological Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 595J Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 595K Independent Study: Microcomputer Analysis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 596C Group Study: Toxicology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 601 Metabolism and Disposition of Toxic Agents Credits: 3 (3-0-0)
Course Description: Metabolism of toxic agents and effects on their fate in the body. Covalent and non-covalent interactions with cellular targets.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 602 Toxicological Mechanisms Credits: 3 (3-0-0)
Course Description: Role of cellular information systems in toxic mechanisms: DNA expression, signal transduction and control of cellular processes.
Prerequisite: ERHS 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 603 Toxicological Pathology Credits: 3 (3-0-0)
Course Description: Toxicological study of pharmacologic, chemical and environmental agents and resulting morphologic and cellular changes.
Prerequisite: BMS 300 or BMS 360.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 611 Cancer Genetics Credits: 2 (2-0-0)
Course Description: Role of genetic background in determining individual susceptibility to cancer.
Prerequisite: BZ 350 or MIP 450.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 630 Radiological Physics and Dosimetry II Credits: 3 (3-0-0)
Course Description: Calculations and measurement techniques for dosimetry shielding and protection from ionizing radiations.
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 632 Techniques in Radiation Dosimetry Credit: 1 (0-3-0)
Course Description: Techniques for determining the absorbed dose in tissue from ionizing radiations.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 633 Radiation Detection Methods in Radiobiology Credit: 1 (0-3-0)
Course Description: Detection and measurement of ionizing radiation appropriate for radiobiologists.
Prerequisite: ERHS 630, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 636 Industrial Hygiene Control Methods Credits: 3 (3-0-0)
Course Description: Controlling occupational exposures to chemical agents, emphasizing local exhaust ventilation; personal protective devices.
Prerequisite: ERHS 526 and ERHS 536, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 637 Environment, Safety, and Health Management Credits: 3 (3-0-0)
Course Description: Environment, safety, and health management systems for occupational health practitioners; major environmental and DOT regulatory standards and laws.
Prerequisite: ERHS 526.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 640 Advanced Epidemiology Credits: 3 (3-0-0)
Course Description: In-depth exploration of advanced epidemiologic methods.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 642  Applied Logistic Regression  Credits: 3 (3-0-0)
Course Description: Basic and advanced concepts of logistic regression with focus on practical applications in epidemiology using SAS.
Prerequisite: ERHS 532 and ERHS 542.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 656  Occupational Noise Control  Credits: 3 (3-0-0)
Course Description: Measurement and control of industrial or environmental noise emphasizing practical solutions.
Prerequisite: ERHS 527.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 658  Environmental/Occupational Epidemiology  Credits: 3 (2-0-1)
Course Description: Epidemiologic analyses of effects of exposure to environmental and occupational health hazards.
Prerequisite: ERHS 532.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 665  Radiochemistry  Credits: 3 (2-3-0)
Course Description: Radionuclide separation and measurement and radiotracer applications in physical and biological systems.
Prerequisite: (CHEM 114 and MATH 155) and (ERHS 530, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 670  Directed Readings  Credits: Var[1-3] (0-0-0)
Course Description: Advanced study through supervised readings on specialized topics.
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 671  Experimental Radioecology  Credit: 1 (0-3-0)
Course Description: Experimental techniques used in radioecological and environmental radioactivity studies.
Prerequisite: (ERHS 400 or ERHS 532) and (ERHS 570).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 675  Environmental Health Regulatory Compliance  Credits: 3 (3-0-0)
Course Description: Requirements and strategies for meeting obligations under regulations and laws involved in environmental and occupational health protection.
Prerequisite: None.
Registration Information: 15 credits of ERHS courses 500-level or above or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 679  Occ Env Health Interdisciplinary Symposium  Credits: 2 (0-0-2)
Course Description: Evaluation of occupational and environmental health issues, through multidisciplinary interactions in seminars and field visits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in a graduate program related to occupational, environmental, or public health. May be repeated for credit. Required field trips.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 684  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Participation in environmental health course teachings under guidance of faculty in classroom, laboratory, or field.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 687  Internship  Credits: Var[1-6] (0-0-0)
Course Description: Advanced study or research in environmental health with a governmental agency, private sector entity, or research facility.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 692  Seminar  Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 693A  Research Seminar: Epidemiology  Credit: 1 (0-0-1)
Course Description: Presentation of student research and discussion of publications from scientific literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 693B  Research Seminar: Industrial Hygiene  Credit: 1 (0-0-1)  
**Course Description:** Presentation of student research and discussion of publications from scientific literature.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 693C  Research Seminar: Toxicology  Credit: 1 (0-0-1)  
**Course Description:** Presentation of student research and discussion of publications from scientific literature.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 693D  Research Seminar: Health Physics  Credit: 1 (0-0-1)  
**Course Description:** Presentation of student research and discussion of publications from scientific literature.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695A  Independent Study: Epidemiology  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in epidemiology under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695B  Independent Study: Occupational and Environmental Health  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in occupational and environmental health under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695C  Independent Study: Toxicology  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in toxicology under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695D  Independent Study: Radiation Chemistry  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in radiation chemistry under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695E  Independent Study: Radiation Ecology  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in radiation ecology under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695F  Independent Study: Cancer Biology  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in cancer biology under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695G  Independent Study: Health Physics  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in health physics under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695H  Independent Study: Exposure Assessment  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in exposure assessment under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695I  Independent Study: Small Animal Radiology  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in small animal radiology under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.  

ERHS 695J  Independent Study: Large Animal Radiology  Credits: Var[1-18] (0-0-0)  
**Course Description:** Specialized study in large animal radiology under supervision of faculty.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.
ERHS 695K Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in special techniques in radiology under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695L Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in radiation therapy under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695M Independent Study: Computed Tomography Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in computed tomography under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695N Independent Study: Magnetic Resonance Imaging Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in magnetic resonance imaging under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695O Independent Study: Ultrasound Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in ultrasound under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 695P Independent Study: Nuclear Medicine Credits: Var[1-18] (0-0-0)
Course Description: Specialized study in nuclear medicine under supervision of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696A Group Study: Epidemiology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696B Group Study: Industrial Hygiene Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 520.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696C Group Study: Toxicology Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 696D Group Study: Health Physics Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of research mentor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 701 Advanced Diagnostic Imaging Modalities Credits: 4 (4-0-0)
Course Description: Interpretation/applications of advanced imaging methods including ultrasound, nuclear medicine, magnetic resonance imaging and computed tomography.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
ERHS 711 Advanced Radiographic Interpretation Credits: Var[1-4] (0-0-0)
Course Description: Radiographic interpretation of disease processes of all major systems in large and small animals.
Prerequisite: VM 786A or VM 786B.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 712 Physics of Diagnostic Imaging Credits: 3 (3-0-0)
Course Description: Physics of imaging for radiology, ultrasound, computerized tomography, magnetic resonance, and nuclear medicine.
Prerequisite: None.
Registration Information: DVM or equivalent professional veterinary medicine degree required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 714 Radiation Therapy Physics Credits: 3 (3-0-0)
Course Description: Radiation therapy physics, photon and electron production for therapeutic use, teletherapy, brachytherapy, radiation protection and quality assurance.
Prerequisite: None.
Registration Information: DVM or health physics, physics, or engineering graduate student.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 721 Radiation Oncology Credits: Var[1-3] (0-0-0)
Course Description: Management of spontaneous and experimental tumors with emphasis on radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 726 Aerosols and Environmental Health Credits: 3 (3-0-0)
Course Description: Properties and behavior of environmental and occupational aerosols emphasizing how airborne particles affect health of humans and the environment.
Prerequisite: PH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 733 Environmental Carcinogenesis Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms by which environmental carcinogens exert effects.
Prerequisite: BC 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 751 Advanced Radiation Biology I Credits: 3 (3-0-0)
Course Description: Molecular and cellular mechanisms of radiation damage and repair; mammalian radiation genetics.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 753 Advanced Radiation Biology II Credits: 3 (3-0-0)
Course Description: Perturbations in cell cycle and cell population growth kinetics by radiation; radiation effects on normal tissues; radiation oncogenesis.
Prerequisite: ERHS 550.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ERHS 765 Environmental Contaminant Modeling II Credit: 1 (0-3-0)
Course Description: Development and analysis of advanced computer models for radionuclide and chemical transport in aquatic and terrestrial ecosystems.
Prerequisite: ERHS 563 and ERHS 570.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

ERHS 770 Radiation Biology Basic to Tumor Therapy Credit: 1 (0-0-1)
Course Description: Current aspects of radiation biology pertinent to improvements in radiation therapy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ERHS 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 786 Practicum Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: ERHS 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 787 Internship Credits: Var[1-6] (0-0-0)
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 792 Seminar Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 793 Seminar Credit: 1 (0-0-1)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795A Independent Study: Epidemiology Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795B Independent Study: Occupational and Environmental Health Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795C Independent Study: Toxicology Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795D Independent Study: Radiation Chemistry Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795E Independent Study: Radiation Ecology Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795F Independent Study: Cancer Biology Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795G Independent Study: Health Physics Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795H Independent Study: Exposure Assessment Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795I Independent Study: Small Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795J Independent Study: Large Animal Radiology Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795K Independent Study: Special Techniques in Radiology Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795L Independent Study: Radiation Therapy Credits: Var[1-18] (0-0-0)
Course Description: Professional seminar series with student interaction on weekly basis; topics presented by outside experts, faculty, or doctoral candidates.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
ERHS 795M Independent Study: Computed Tomography  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795N Independent Study: Magnetic Resonance Imaging  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction:Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795O Independent Study: Ultrasound  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 795P Independent Study: Nuclear Medicine  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 796 Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ERHS 799 Dissertation  Credits: Var[1-18] (0-0-0)
Course Description: Doctoral-level research and preparation of dissertation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Courses

ETST 100 Introduction to Ethnic Studies (GT-SS3)  Credits: 3 (3-0-0)
Course Description: Key concepts, theories, and historical experiences that form the basis of scholarly work in comparative ethnic studies, domestically and internationally.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 110 Blacks in Higher Education  Credit: 1 (0-0-1)
Course Description: Contemporary issues of Blacks in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Black Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 120 Native Americans in Higher Education  Credit: 1 (0-0-1)
Course Description: Contemporary issues of Native Americans in higher education.
Prerequisite: None.
Registration Information: Must be enrolled in the Native American Issues Forum.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 130 West Africa in Global and Local Perspective  Credit: 1 (0-0-0)
Course Description: Sociopolitical and historical perspective of social and cultural issues in contemporary Ghana, West Africa, and connections to the African diaspora.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 201 Introduction to Queer Studies  Credits: 3 (3-0-0)
Course Description: Intersectional framework for understanding historical and contemporary applications of queer theory and queer studies.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 205 Ethnicity and the Media (GT-SS3)  Credits: 3 (3-0-0)
Course Description: Ethnic representation across time as represented in auto/biography, fiction, poetry, and popular media.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

Environmental Engineering-ENVE (ENVE)
Ethnic Studies-ETST (ETST)
ETST 234  Introduction to Native American Literature  Credits: 3 (3-0-0)
Also Offered As: E 234.
Course Description: Native American writings and their significance in American culture.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 234 and E 234.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 239  Introduction to Chicano Literature  Credits: 3 (3-0-0)
Also Offered As: E 239.
Course Description: Chicano fiction and poetry with consideration of historical roots and influences.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 239 and E 239.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 240  Native American Cultural Experience (GT-AH2)  Credits: 3 (3-0-0)
Course Description: Exploration of Native lives and expressions through examination of Native architecture, art, music, film, activism, and literature.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

ETST 250  African American History (GT-HI1)  Credits: 3 (3-0-0)
Also Offered As: HIST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 250 and HIST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 252  Asian-American History (GT-HI1)  Credits: 3 (3-0-0)
Also Offered As: HIST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 252 and HIST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 253  Chicana/o History and Culture (GT-HI1)  Credits: 3 (3-0-0)
Course Description: Historical study of Chicana/o/Mexicana/o people and culture from Spanish colonization to beginning of 20th century.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, History (GT-HI1).

ETST 254  La Chicana in Society  Credits: 3 (3-0-0)
Course Description: Historical contributions of Chicana women and current gender issues in Chicano communities in the US.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 255  Native American History (GT-HI1)  Credits: 3 (3-0-0)
Also Offered As: HIST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 255 and HIST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

ETST 256  Border Crossings: People/Politics/Culture (GT-SS3)  Credits: 3 (3-0-0)
Course Description: Colonial and post-colonial discourse, politics of representation and epistemology of "location" it has produced: first and third world.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

ETST 261  Latina/o Populations in the U.S.  Credits: 3 (3-0-0)
Course Description: Historical processes and sociocultural phenomena that define Latina/o populations in the U.S.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 300  Queer Studies and Women of Color  Credits: 3 (3-0-0)
Course Description: Historical/contemporary analysis of the contributions of women of color to queer studies; racialized sexual/gender identities; written and cultural works.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 310  African-American Studies  Credits: 3 (3-0-0)
Course Description: Meaning of African American studies in context of American higher education; historical development of such studies; perceptions and misperceptions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 314 Inclusive Sports Organizations  Credits: 3 (3-0-0)
Course Description: Issues of diversity and inclusion across U.S. and international sport organizations to advance sport industries.
Prerequisite: None.
Registration Information: Freshman not allowed.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 320 Ethnicity and Film: Asian-American Experience  Credits: 3 (3-0-0)
Course Description: Asian American film image and film representation through both mainstream and independent movies.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 324 Asian-Pacific Americans and the Law  Credits: 3 (3-0-0)
Course Description: Legal history of Asian Pacific Americans examined through case studies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 330 African American Resistance and Self-Creation  Credits: 3 (3-0-0)
Course Description: African American resistance to dehumanization and the creation of a positive image.
Prerequisite: ETST 000 to 99999 - at least 1 course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 332 Contemporary Chicana/o Issues  Credits: 3 (3-0-0)
Course Description: Current Chicana/o issues including conquest, immigration, urbanization, health in context of societal trends.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 352 Indigenous Women, Children, and Tribes  Credits: 3 (3-0-0)
Course Description: Historical and contemporary lives of women, children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 352 and SOWK 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 354 Black Cinema and Media  Credits: 3 (3-0-0)
Course Description: African American efforts to depict themselves in films and other media to counter often problematic mainstream depictions.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 356 Global Environmental Justice Movements  Credits: 3 (3-0-0)
Course Description: How the world's poor and minorities self-empower to challenge institutional racism and government apathy in order to secure basic environmental goods.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 364 Asian American Social Movements, 1945-Present  Credits: 3 (3-0-0)
Also Offered As: HIST 364.
Course Description: Historical relationships between Asian American and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both ETST 364 and HIST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 370 Caribbean Identities  Credits: 3 (3-0-0)
Course Description: Development of Caribbean identities from the arrival of Amerindian groups to the abolition of slavery in the nineteenth century.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 371 The Modern Caribbean  Credits: 3 (3-0-0)
Course Description: Modern political and socio-economic developments in the Caribbean with emphasis on race, ethnicity, and gender.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 377 African Americans in Sports  Credits: 3 (3-0-0)
Course Description: Sociocultural and historical dimensions of African Americans in sports.
Prerequisite: None.
Registration Information: Completion of AUCC Category 2 required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 382 Italian Ethnic Identity, Culture, and Gender  Credits: 3 (2-0-1)
Also Offered As: LGEN 382.
Course Description: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 404 Race Formation in the United States  Credits: 3 (3-0-0)
Course Description: Concept of race as a social construct in the shaping of U.S. character, values, and institutions.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 405  Ethnicity, Class, and Gender in the U.S.  Credits: 3 (3-0-0)
Course Description: Roles of and interconnections among ethnicity, class, and gender for various groups in the United States.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 410  African American Periods and Personalities  Credits: 3 (3-0-0)
Course Description: Historical moments, movements, and men and women who have helped shape the African American heritage.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 411  Black Feminism(s)  Credits: 3 (3-0-0)
Course Description: History and trajectory of Black feminist thought from the nineteenth century to the present.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 412  Africa and African Diaspora  Credits: 3 (3-0-0)
Course Description: Interdisciplinary investigation of retention, transformation, and creation of culture in plantation economies of Americas.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 413  Queer Creative Expressions  Credits: 3 (3-0-0)
Course Description: Analysis of queer creative expressions within socio-political discourse and cultural works, with an emphasis on critical, queer feminist theory.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 414  Development in Indian Country  Credits: 3 (3-0-0)
Also Offered As: ANTH 414.
Course Description: Critical examination of history, public policy, and tribal strategies for economic development and natural resource management in Indian country.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 414 and ANTH 414.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 415  Indigenous Film and Video  Credits: 3 (3-0-0)
Course Description: Historical and contemporary analysis of film featuring indigenous peoples.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 430  Latina/o Creative Expression  Credits: 3 (3-0-0)
Course Description: Creative expression in literature, art, theatre, music: approach to understanding experiences of various Chicana/o/Latina/o groups in the U.S.
Prerequisite: None.
Registration Information: Junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 432  Latina/o Routes to Empowerment  Credits: 3 (3-0-0)
Course Description: Critical examination of political and economic strategies used to incorporate Chicana/o/Latina/o groups into U.S. society.
Prerequisite: None.
Registration Information: Junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 438  Native American Literature  Credits: 3 (3-0-0)
Also Offered As: E 438.
Course Description: Literature of Native Americans emphasized as distinctive tradition in American literature and cultural expression of indigenous peoples.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 438 and E 438.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 444  Federal Indian Law and Policy  Credits: 3 (3-0-0)
Also Offered As: SOC 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 444 and SOC 444.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

ETST 454  Chicano/a Film and Video  Credits: 3 (2-2-0)
Also Offered As: SPCM 454.
Course Description: Emergence of Chicano/a cinema from a place of displacement, resistance, and affirmation found in contemporary Chicano/a film, video.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both ETST 454 and SPCM 454.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 484 Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of instructor. May be taken only once. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 487 Internship—Ethnic Studies Credits: 3 (0-0-9)
Course Description: Supervised work experience for Ethnic Studies Majors and Minors.
Prerequisite: ETST 100 with a minimum grade of C and ETST 200 to 495 with a minimum grade of C - at least 15 credits.
Registration Information: Written consent of instructor. Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

ETST 492 Seminar Credits: 3 (0-0-3)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 493 Ethnic Studies Research Methods and Writing Credits: 3 (3-0-0)
Course Description: Research ethics, methodology, theory, and writing in ethnic studies.
Prerequisite: ETST 100 and ETST 101 to 481 - at least 18 credits.
Registration Information: Senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

ETST 501 Ethnic Studies History and Theory Credits: 3 (3-0-0)
Course Description: History and theory of study of racial and ethnic formation, identity, and politics.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 502 Research Methods Credits: 3 (3-0-0)
Course Description: Interdisciplinary ethnic studies research methods.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 503 Contemporary Ethnic Studies Issues Credits: 3 (3-0-0)
Course Description: Contemporary ethnic studies issues in the United States and abroad.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 510 Ethnicity, Race, and Health Disparities in U.S. Credits: 3 (3-0-0)
Course Description: Health status of ethnic/racial populations; cultural dimensions that underlie health and health disparities.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 520 Race and U.S. Social Movements Credits: 3 (3-0-0)
Course Description: Intersections of race, class, gender, and sexuality which structure life chances and mobilize movements for rights, recognition, and resources.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 531 Latina/o Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Impact of Latina/o politics on the U.S. political system by examining Latina/o political mobilization patterns and behaviors.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 535 Chicana Feminism: Theory and Form Credits: 3 (3-0-0)
Course Description: Different forms of Chicana feminism as produced by Chicana scholars, poets, artists, and activists, from historical and contemporary accounts.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

ETST 540 Race in Latin America Credits: 3 (0-0-3)
Also Offered As: SPCM 540.
Course Description: Examination of race in Latin America and its intersection with ethnicity, class, gender, and sexuality.
Prerequisite: None.
Registration Information: Admission to Ethnic Studies graduate program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 541  Gender, Violence and Indigenous Peoples  Credits: 3 (3-0-0)
Course Description: Multiple forms of violence against indigenous women and children in the Americas, Australia, and New Zealand.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 544  National Identities and Nation Building  Credits: 3 (3-0-0)
Also Offered As: POLS 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both ETST 544 and POLS 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 545  Immigration and Citizenship in U.S. History  Credits: 3 (3-0-0)
Course Description: Comparative survey of immigration and citizenship debates in the U.S. since the 19th century, with a focus on the politics of racial formations.
Prerequisite: None.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 550  Indigenous Law, Policy, and Peoples  Credits: 3 (3-0-0)
Course Description: Laws and policies impacting indigenous women, children, families, and communities in North America, New Zealand, and Australia.
Prerequisite: None.
Registration Information: Graduate or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 555  African American Intellectual Thought  Credits: 3 (3-0-0)
Course Description: Historical efforts of Black/African American intellectuals to describe the conditions and circumstances of African descendants in the U.S.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
ETST 560  Race, Ethnicity, and Higher Education  Credits: 3 (3-0-0)
Course Description: Historical and contemporary experiences of people of color as students, faculty, and staff in higher education in the United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Courses

FACS 179 Introduction to Family and Consumer Sciences Credits: 2 (2-0-0)
Course Description: Career options in family and consumer sciences; professional leadership responsibilities.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 320 Finance-Personal and Family Credits: 3 (3-0-0)
Course Description: Management of income, expenditures, credit, savings, investment, insurance, taxes, and assets considering legislation and economic conditions.
Prerequisite: None.

Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 479 Colloquium-Family and Consumer Sciences Credits: 2 (0-0-2)
Course Description: Current topics and issues related to professional roles, responsibilities, and opportunities.
Prerequisite: FACS 179, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FACS 484 Supervised College Teaching Credits: 2 (0-0-2)
Course Description: Prerequisite: None.

Registration Information: Sophomore standing. Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487A Internship: Extension Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487B Internship: Community Service Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 487C Internship: Business Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 494 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FACS 590 Workshop Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FACS 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Finance-FIN (FIN)

Courses

FIN 300 Principles of Finance Credits: 3 (3-0-0)
Course Description: Overview of financial markets and institutions, analysis of securities and investigation of financial management techniques.
Prerequisite: (ACT 205 or ACT 210) and (AREC 202 or ECON 202) and (ECON 204) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both FIN 300 and FIN 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 305 Fundamentals of Finance Credits: 3 (3-0-0)
Course Description: Role of finance in management of the firm; role, structure of financial markets and institutions, valuation of basic securities.
Prerequisite: (ACT 205 or ACT 210) and (ECON 204).
Registration Information: Credit not allowed for both FIN 305 and FIN 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 310 Financial Markets and Institutions Credits: 3 (3-0-0)
Course Description: Analysis of the functions and operations of financial markets and the primary and secondary securities created in those markets.
Prerequisite: ECON 204.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 311 Debt Securities Analysis Credits: 3 (3-0-0)
Course Description: Analysis of corporate, government, and mortgage-based debt securities. Emphasis on securitization of asset-backed obligations.
Prerequisite: (FIN 300) and (FIN 310 or ECON 315) and (FIN 355).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 320 Introduction to Financial Planning Credits: 3 (3-0-0)
Course Description: Personal financial planning including budgeting, tax planning, credit management, investing, retirement, and estate planning.
Prerequisite: ACT 210 and ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 342 Risk Management and Insurance Credits: 3 (3-0-0)
Course Description: Management of insurable risks for the individual and business firm.
Prerequisite: FIN 300 or FIN 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 355 Principles of Investments Credits: 3 (3-0-0)
Course Description: Modern investment theory with applications in the debt and equity markets, with introduction to portfolio management.
Prerequisite: FIN 300 and FIN 310.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 370 Financial Management-Theory and Application Credits: 3 (3-0-0)
Course Description: Theory and application of financial management to business firms; case problems used for illustration.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 430 Introduction to Financial Modeling Credits: 3 (3-0-0)
Course Description: Financial modeling that integrates conceptual material with spreadsheet-based numerical solutions and simulation techniques.
Prerequisite: FIN 300 and FIN 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 440 Estate Planning Credits: 3 (3-0-0)
Course Description: Methods for conservation and transfer of wealth, considering aspects of tax, trusts, wills, probate, advanced directives, and charitable giving.
Prerequisite: ACT 330 and FIN 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 442 Employee Benefits and Retirement Planning Credits: 3 (3-0-0)
Course Description: Design, financing, accounting, and taxation for employee benefit and retirement plans.
Prerequisite: FIN 342.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 445 Financial Plan Development Credits: 3 (3-0-0)
Course Description: Analyze client finances and economic conditions, develop and communicate comprehensive financial plan using financial planning professional standards.
Prerequisite: ACT 330 and FIN 320 and FIN 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 455 Advanced Portfolio Management Credits: 3 (3-0-0)
Course Description: Advanced hedging and portfolio management theory and techniques.
Prerequisite: FIN 355.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 470 Financial Risk Management Credits: 3 (3-0-0)
Course Description: Futures, options, asset-backed securities and other derivatives as they are used in financial risk management.
Prerequisite: FIN 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 471 Enterprise Valuation Credits: 3 (3-0-0)
Course Description: Analytical framework for measuring, managing, and applying principles and tools to value enterprises.
Prerequisite: FIN 355 and FIN 370.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 475 International Business Finance Credits: 3 (3-0-0)
Course Description: International financial management emphasizing markets, instruments, hedging techniques, and operating strategies.
Prerequisite: FIN 300.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FIN 498 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FIN 524 Financial Statistics Credits: 3 (3-0-0)
Also Offered As: STAT 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: MATH 345; STAT 420, or Admission to MSBA program with Financial Risk Management specialization. Credit not allowed for both FIN 524 and STAT 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 600 Financial Management-Theory and Case Studies Credits: 3 (3-0-0)
Course Description: Financial problems for various types of business organizations.
Prerequisite: FIN 300 or FIN 305.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 601 Financial Management and Markets Credits: 3 (3-0-0)
Course Description: Integrated coverage of financial management, investments, and markets and institutions from the public, private, and nonprofit perspective.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 602 Options and Futures Credit: 1 (1-0-0)
Course Description: Advanced analysis and pricing of derivative securities, such as futures, forwards and options.
Prerequisite: BUS 641.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 603 Corporate Risk Management Credit: 1 (1-0-0)
Course Description: Survey of topics related to corporate risk management including the role and function of insurance and risk management for business enterprises.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 604 Employee Benefits Credit: 1 (1-0-0)
Course Description: Design and financing of employee benefits including health plans, disability, life insurance, long-term care, and retirement plans.
Prerequisite: FIN 603.
Restriction: Must not be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 605 Enterprise Valuation Credits: 3 (3-0-0)
Course Description: Corporate valuation methodologies including dividend discount model, relative valuation using market multiples, free cash flows and options analysis.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 606 Fundamentals of International Finance Credit: 1 (1-0-0)
Course Description: Fundamental principles of international finance and how they relate to business operations and strategies.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 607 Fundamentals of Bond Markets Credit: 1 (1-0-0)
Course Description: Properties of bonds and bond markets, pricing bonds by arbitrage, risk characteristics of bonds.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 608 Fundamentals of Firm Valuation Credit: 1 (1-0-0)
Course Description: Identifies key value drivers for a business and how these can be identified utilizing currently available financial information.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 609 Fundamentals of Personal Finance  Credit: 1 (1-0-0)
Course Description: Personal financial planning focusing on TVM, personal financial statements, retirement plans, government sponsored benefits and education planning.
Prerequisite: BUS 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 610 Debt Securities Analysis  Credits: 3 (3-0-0)
Course Description: Valuation of corporate, government, and mortgage-backed debt securities and strategies for management of debt security portfolios.
Prerequisite: FIN 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 625 Quantitative Methods in Finance  Credits: 3 (3-0-0)
Course Description: Review and application of mathematical and analytical techniques used in solving financial problems.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 630 Financial Modeling  Credits: 3 (3-0-0)
Course Description: Practical applications of financial modeling and computer programming to analyze financial data.
Prerequisite: FIN 524 or STAT 524.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 655 Investments  Credits: 3 (3-0-0)
Course Description: Investment analysis and decision making emphasizing equity securities and portfolio management.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.S. Business Administration, Financial Risk Management specialization. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 661 Advanced Portfolio Management  Credits: 3 (3-0-0)
Course Description: Portfolio management, asset allocation, and asset selection theory and techniques.
Prerequisite: FIN 605 and FIN 655.
Restriction: Must be a: Graduate.
Registration Information: Written consent of advisor.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 665 Financial Engineering  Credits: 3 (3-0-0)
Course Description: Using futures, options, swaps, and securitized transactions in financial management.
Prerequisite: FIN 610 or FIN 655 or FIN 675.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 666 Financing, Evaluating Sustainable Enterprise  Credits: 3 (3-0-0)
Course Description: Theoretical and applied approaches to the funding and evaluation of enterprises.
Prerequisite: (BUS 601) and (FIN 601).
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 670 Risk Management Theory and Application  Credits: 3 (3-0-0)
Course Description: Fundamentals of financial risk management using quantitative techniques and models to identify, measure, and manage corporate risk.
Prerequisite: (FIN 524 or STAT 524) and (FIN 655).
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 675 International Finance  Credits: 3 (3-0-0)
Course Description: Analysis of the foreign exchange market and international financial markets.
Prerequisite: FIN 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 678 Financial Decisions-Theory and Practice  Credits: 3 (3-0-0)
Course Description: Analysis of theory of corporate finance with emphasis on underlying assumptions and implications for financial decisions.
Prerequisite: FIN 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FIN 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FIN 698  Research  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FIN 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Fire Emergency Serv Admin-FESA (FESA)

Courses
FESA 310  Fire Service Leadership  Credits: 3 (0-0-3)
Course Description: Theory, practice, and application of ethical leadership in public safety; developing personal ethics and leadership skills and abilities.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 331  Structure Influence on Tactics and Strategy  Credits: 3 (3-0-0)
Course Description: How construction type, alterations, design and materials influence a building’s reaction to fire. Fireground influence on tactics and strategy.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 333  Proposals/Reports in Fire Service Management  Credits: 3 (0-0-3)
Course Description: Process of preparing reports and developing a proposal supported by research. Introduction to research techniques, Internet and library use; conventions of documentation.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 334  Orientation to Experiential Learning  Credit: 1 (0-0-1)
Course Description: Demonstration of knowledge, skill, and professional experience for the purpose of enhancing documentation and career development skills.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 335  Trends in Fire Science Technologies  Credits: 3 (0-0-3)
Course Description: Analytical tools designed to evaluate, align, select, and implement emerging fire science technologies.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 336  Fire Emergency Services Administration  Credits: 3 (0-0-3)
Course Description: Fire and emergency service administrative structures and processes. Examination of management and leadership models and applications.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 337  Policy and Public Administration  Credits: 3 (0-0-3)
Course Description: Political and legal foundations of fire and emergency services. Public administration concepts, decision making and policy development.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FESA 338  Essentials of Emergency Management  Credits: 3 (0-0-3)
Course Description: Emergency management theory; mitigation, planning, response, and recovery in large-scale incidents. Development/operation of emergency operation centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 339  Incident Command Systems  Credits: 3 (0-0-3)
Course Description: Theory and application of incident command systems (ICS) to the command and coordination of major emergency operations.
Prerequisite: FESA 334.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 341  Fire Officer I-A  Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level I, 4.1 to 4.4.
Prerequisite: None.
Registration Information: Enrollment in FESA program or written consent of instructor. Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 342  Fire Officer I-B  Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory level of performance, as confirmed by NFPA Standard 1021, Level II, 4.5 to 4.7.
Prerequisite: FESA 341 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 343  Essentials of Fire Controls  Credits: 3 (0-0-3)
Course Description: Emergency medical service models, design implementation, evaluation. Interactions with health care systems, public policy and public health systems.
Prerequisite: FESA 342 and FESA 343.
Registration Information: Offered as an online course only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 344  Volunteer/Combination Fire Officer Management  Credits: 3 (0-0-3)
Course Description: Development and management of fire and emergency service organizations with volunteer and combination resources.
Prerequisite: FESA 342 and FESA 343.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 345  Training Program Management  Credits: 3 (0-0-3)
Course Description: Development of agency training and education programs. Utilization of training and education practices, resources, facilities and technologies.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 346  Fire Protection Through Model Building Codes  Credits: 3 (0-0-3)
Course Description: Overview of the most current fire codes that are used across the United States. Discussion of fire inspection methodology and enforcement practices.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 347  Fire and Emergency: Legal Considerations  Credits: 3 (0-0-3)
Course Description: Fire Service in relation to the complex legal system of the United States, individual states and local jurisdictions.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 348  Preventive Program Management  Credits: 3 (0-0-3)
Course Description: Design, implementation, and evaluation of fire and risk prevention programs using education, engineering, and enforcement approaches.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FESA 441 Fire Officer II-A Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory/managerial level of performance, as confirmed by NFPA Standard 1021, Level II, 5.1 to 5.4.
Prerequisite: FESA 342 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 442 Fire Officer II-B Credits: 3 (3-0-0)
Course Description: Fire officer competencies at the supervisory/managerial level of performance, as confirmed by NFPA Standard 1021, Level II, 5.5 to 5.7.
Prerequisite: FESA 441 with a minimum grade of C.
Registration Information: Offered as an online course only.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FESA 467 Integrated Management Simulation Credits: 3 (0-0-3)
Course Description: Integration management and administrative knowledge and skills in the development of a fire and emergency service management simulation.
Prerequisite: FESA 432 and FESA 433.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FESA 492 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Discussion and documentation of professional experience in fire and emergency services.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FESA 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the FESA B.S. program; written consent of instructor. Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FW 104 Wildlife Ecology and Conservation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Essentials of wildlife ecology as a foundation for understanding issues on the origins, management and conservation of biodiversity.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

FW 111 Basic Outdoor Skills in FWCB Credit: 1 (.5-1-0)
Course Description: Basic outdoor skills for FWCB and outdoor novices. History of wildlife conservation and reasons for declining outdoor participation.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. May be taken up to 3 times for a maximum of 3 credits. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 179 New-to-the-Major Seminar Credit: 1 (0-0-1)
Course Description: Introduces students new to the Fish, Wildlife, and Conservation Biology major to curriculum, faculty, research, key concepts, careers, professional development, and other students.
Prerequisite: None.
Registration Information: This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FW 204 Introduction to Fishery Biology Credits: 3 (2-3-0)
Course Description: Exposure to sampling techniques, agencies, and topics in fishery biology careers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 260 Principles of Wildlife Management Credits: 3 (3-0-0)
Course Description: Ecology principles applied to conservation and management of fish/wildlife resources. Quantitative methods, socioeconomic factors, population dynamics.
Prerequisite: (MATH 124 or MATH 160) and (BZ 110 or LIFE 103).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 300 Biology and Diversity of Fishes Credits: 2 (2-0-0)
Course Description: Biology and zoology of fishes: anatomy, taxonomy, evolution, physiology, behavior, ecology, zoogeography, and conservation.
Prerequisite: BZ 111 or LIFE 103.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 301 Ichthyology Laboratory Credit: 1 (0-2-0)
Course Description: Anatomy, taxonomy, evolution and ecology of North American freshwater fishes.
Prerequisite: FW 300, may be taken concurrently.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Registration Information</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW 350</td>
<td>Teaching Shooting Responsibility</td>
<td>4</td>
<td>Education and instructor certification course to develop knowledge, skills, behavior for teaching about firearms, shooting sports, and associated ethics.</td>
<td>None.</td>
<td>Written consent of instructor. Students need a minimum of a 2.500 GPA per Education Abroad standards.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>FW 384</td>
<td>Supervised College Teaching</td>
<td>Var[1-5]</td>
<td>Instruction and practice in laboratory instruction in lower-division departmental courses.</td>
<td>None.</td>
<td>Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.</td>
<td>Fall, Spring</td>
<td>Instructor Option</td>
<td>No.</td>
</tr>
<tr>
<td>FW 385</td>
<td>Hunter Education for Instructors</td>
<td>2</td>
<td>Principles of learning and teaching for instructors of state hunter education courses.</td>
<td>None.</td>
<td>Written consent of instructor.</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>FW 400</td>
<td>Conservation of Fish in Aquatic Ecosystems</td>
<td>3</td>
<td>Ecological processes that create habitat and biotic template for fish in aquatic ecosystems; human effects; strategies for conserving fishes.</td>
<td>FW 260.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>FW 401</td>
<td>Fishery Science</td>
<td>3</td>
<td>Theory, philosophy, and applications for study and management of fishery resources.</td>
<td>FW 300 and FW 360.</td>
<td>Written consent of instructor.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>FW 405</td>
<td>Fish Physiology</td>
<td>3</td>
<td>Physiological ecology of fish; functional adaptations and adjustments used to cope with environmental and physiological states.</td>
<td>FW 300.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>FW 455</td>
<td>Principles of Conservation Biology</td>
<td>3</td>
<td>Review of efforts to study and conserve biological diversity, focused on fish and wildlife populations.</td>
<td>FW 260 and FW 320.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>FW 465</td>
<td>Managing Human-Wildlife Conflicts</td>
<td>3</td>
<td>Methods for resolving conflicts caused by wildlife; integrating animal behavior, population dynamics, economics, and human dimensions into solutions.</td>
<td>FW 260.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<td>FW 1932</td>
<td>Fish/Wildlife/Conserv Bio-FW (FW)</td>
<td>1932</td>
<td>Focused on fish and wildlife populations.</td>
<td>FW 260.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<td>FW 260.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<td>FW 260.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<td>FW 260.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
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<td>FW 260.</td>
<td>Written consent of instructor.</td>
<td>Spring</td>
<td>Traditional</td>
<td>No.</td>
</tr>
</tbody>
</table>
FW 467 Wildlife Disease Ecology  Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: LIFE 320.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 468 Wild Bird Management Credits: 3 (2-3-0)
Course Description: Ecology and management of game, pest, and rare bird populations and nongame bird communities.
Prerequisite: FW 260.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 469 Conservation and Management of Large Mammals Credits: 3 (3-0-0)
Course Description: Principles of behavior, ecology, population dynamics, and conservation related to large mammals.
Prerequisite: (BZ 330 and FW 260 and LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 471 Wildlife Data Collection and Analysis Credits: 4 (2-4-0)
Course Description: Analysis methods used in wildlife management and research; adaptive resource management with emphasis on learning through field and computer labs.
Prerequisite: FW 370 and NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 472 Issues in Animal Conservation and Management Credits: 3 (2-0-1)
Course Description: Current and emerging issues in fish and wildlife conservation and management at the state, national, and global scales.
Prerequisite: (FW 260) and (LIFE 320).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 475 Conservation Decision Making Credits: 3 (3-0-0)
Course Description: Structured approaches to conservation and management of vertebrates; articulating objectives, developing management options, and predicting outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Junior or senior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 476A Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 476B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 477 Wildlife Habitat Use and Management Credits: 3 (1-3-1)
Course Description: Wildlife habitat evaluation, classification, and improvement; analysis of habitat use patterns; planning and implementation of management plans.
Prerequisite: (FW 260) and (NR 319 or NR 322).
Registration Information: Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 478 Internship Credits: Var[1-6] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 479A Independent Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 479B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 482A Travel Abroad: Conserving Desert/Marine Animals Credits: 3 (0-0-3)
Course Description: Ecology of desert and marine animals and application to problems of animal conservation.
Prerequisite: LIFE 320.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 487 Internship Credits: Var[1-6] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 492A Group Study: Fishery Biology Credit: 1 (0-0-1)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

 FW 677 Wildlife Habitat Use and Management Credits: 3 (1-3-1)
Course Description: Wildlife habitat evaluation, classification, and improvement; analysis of habitat use patterns; planning and implementation of management plans.
Prerequisite: (FW 260) and (NR 319 or NR 322).
Registration Information: Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 495A Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 495B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496A Group Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 496B Group Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description: Field experience in fish and wildlife management.
Prerequisite: None.
Registration Information: Written consent of instructor. Students need a minimum of a 2.5 GPA per Education Abroad standards.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
FW 540  Fisheries Ecology  Credits: 3 (2-0-1)
Course Description: Population, community, and ecosystem management for fishes and other aquatic organisms in freshwater habitats.
Prerequisite: None.
Registration Information: One course in fishery science; one course in aquatic ecology. Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 544  Ecotoxicology  Credits: 3 (2-0-1)
Course Description: Ecological effects of contaminants on populations, communities, and ecosystems.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 301 or STAT 307).
Registration Information: Must register for lecture and recitation.
Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 551  Design of Fish and Wildlife Studies  Credits: 3 (2-0-1)
Course Description: Principles, types of studies, and philosophy of science in design of experimental, observational, and sampling studies for wildlife investigations.
Prerequisite: STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and recitation.
Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FW 552  Applied Sampling for Wildlife/Fish Studies  Credits: 3 (2-0-1)
Course Description: Survey sampling theory and techniques, including distance sampling, with emphasis on wildlife and fish studies.
Prerequisite: STAT 301 or STAT 307.
Registration Information: Must register for lecture and recitation.
Graduate standing. Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 553  Adaptive Fish and Wildlife Management  Credits: 3 (2-2-0)
Course Description: Formal approaches to making management decisions about wildlife and fish populations, using tools of decision analysis.
Prerequisite: FW 401 or FW 471.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 555  Conservation Biology  Credits: 3 (2-0-1)
Course Description: Ecological factors in conservation of biological diversity.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (STAT 307).
Registration Information: Credit not allowed for both FW 555 and FW 455. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 556  Leopold's Ethic for Wildlife and Land  Credits: 3 (0-0-3)
Course Description: Philosophy, art, history, and science of wildlife and land management from writings of Aldo Leopold.
Prerequisite: None.
Registration Information: Bachelor's degree, or any level ecology or wildlife management course, or written consent of instructor. Offered online only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 557  Wildlife Habitat Management on Private Land  Credits: 3 (0-0-3)
Course Description: Management of cover, food, and water for wildlife and fish in the Great Plains. Emphasis on practices compatible with other uses of private land.
Prerequisite: None.
Registration Information: Bachelor's degree, or any level ecology or wildlife management course, or written consent of instructor. Offered online only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561A  Advanced Topics: Fishery Biology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 561B  Advanced Topics: Wildlife Biology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561C  Advanced Topics: Population Analysis  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 561E  Advanced Topics: Vertebrate Management  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FW 564  Science of Managing Human-Wildlife Conflicts  Credits: 3 (2-0-1)
Course Description: Human-wildlife conflicts, and in particular, damage caused by wildlife, often termed wildlife damage. Topics such as animal behaviors, population dynamics, public attitudes, economics, and effective strategies in understanding the various types of conflicts and how to manage them.
Prerequisite: FW 260 and STAT 301.
Registration Information: Must register for lecture and recitation. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 567  Wildlife Disease Ecology  Credits: 3 (2-0-1)
Course Description: Ecological, epidemiological, and evolutionary principles of disease in fish and wildlife populations; contemporary issues in disease ecology.
Prerequisite: (LIFE 320) and (STAT 301 or STAT 307).
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 573  Travel Abroad-Wildlife Ecology/Conservation  Credits: 3 (3-0-0)
Course Description: Study tour of various overseas ecosystems and natural resources conservation programs; discussions with local ecologists/managers.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 575  Wildlife Habitat Evaluation for Educators  Credits: 3 (0-0-3)
Course Description: Teachers or leaders implement wildlife habitat evaluation procedures in classroom or community programs and evaluate performance of students.
Prerequisite: None.
Registration Information: Graduate standing. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 576  Wildlife Policy, Administration, and Law  Credits: 3 (0-0-3)
Course Description: Evolution of policy affecting wildlife and humans using historical, current, philosophical, legal, and administrative constructs.
Prerequisite: None.
Registration Information: Required: one course in political science; one course in natural resources management. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FW 577  Management of Wildlife Habitat  Credits: 3 (2-0-1)
Course Description: Identifying and implementing management techniques for evaluating, classifying, and improving wildlife habitat to sustain and conserve populations.
Prerequisite: FW 260 or (GR 311 or GR 323 or NR 323 or GR 420 or NR 319 or NR 322 or NR 422 or SOCR 377).
Registration Information: Written consent of instructor. Must register for lecture and recitation. Offered as an online course only. Admission to graduate program in Fish, Wildlife, and Conservation Biology. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 578  Conservation Decision Analysis  Credits: 3 (2-0-1)
Course Description: Identifying decision making processes and adaptive management techniques used in conservation; consideration of objectives, options and outcomes.
Prerequisite: (MATH 155 or MATH 160) and (STAT 301).
Registration Information: Offered as an online course only. Written consent of instructor. Must register for lecture and recitation. Admission to a graduate program in Fish, Wildlife, and Conservation Biology.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FW 605  Advanced Physiological Ecology of Fishes  Credits: 4 (2-3-1)
Course Description: Physiological ecology of fishes; functional adaptations and adjustments used to cope with environmental and physiological states.
Prerequisite: FW 300.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both FW 605 and FW 405.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 662  Wildlife Population Dynamics  Credits: 3 (1-2-1)
Course Description: Population models; experimental evidence and analysis of theories of population regulation; case studies.
Prerequisite: (FW 260 and STAT 301) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 663  Sampling and Analysis of Vertebrate Populations  Credits: 5 (3-3-1)
Course Description: Sampling and analysis of fish and wildlife populations, including survival estimation, capture-recapture sampling, and transect sampling.
Prerequisite: FW 260 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
FW 673 Hierarchical Modeling in Ecology Credits: 3 (3-0-0)
Also Offered As: STAT 673.
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FW 673 and STAT 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FW 677 Wildlife Habitat Management Credits: 3 (1-3-1)
Course Description: Habitat models; vegetation manipulation and monitoring for wildlife; extended field trips.
Prerequisite: FW 260.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory and recitation. Credit allowed for only one of the following courses: FW 477, FW 577, or FW 677. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

FW 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 692 Seminar: Fish, Wildlife, and Conservation Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695A Independent Study: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 695B Independent Study: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 696 Group Study: Fish, Wildlife, Conservation Biology Credits: Var[1-18] (0-0-0)
Course Description: Group study projects on topics in fish, wildlife, and conservation biology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698A Research: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 698B Research: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699A Thesis: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 699B Thesis: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 798A Research: Fishery Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FW 798B Research: Wildlife Biology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FW 799A Dissertation: Fishery Biology  Credits: Var[1-18]  (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FW 799B Dissertation: Wildlife Biology  Credits: Var[1-18]  (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Food Sci+Human Nutrition-FSHN (FSHN)

Courses
FSHN 125 Food and Nutrition in Health  Credits: 2  (2-0-0)
Course Description: Nutritional quality and safety of food related to
human health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
FSHN 150 Survey of Human Nutrition  Credits: 3  (3-0-0)
Course Description: Basic nutrition principles and concepts; their
application to personal health and interactions with societal and
environmental issues.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 192 First Year Seminar  Credit: 1  (0-0-1)
Course Description: Facilitate a successful transition to college for new
incoming students by emphasizing personal growth and identifying
campus resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 300 Food Principles and Applications  Credits: 3  (3-0-0)
Course Description: Application of food preparation theories to
modification and evaluation of food products.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (FSHN 150).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 301 Food Principles and Applications Laboratory  Credits: 2  (0-6-0)
Course Description: Techniques and manipulative skills for preparation
and evaluation of standard and modified food products.
Prerequisite: FSHN 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
FSHN 300 Food Principles and Applications  Credits: 3  (3-0-0)
Course Description: Application of food preparation theories to
modification and evaluation of food products.

FSHN 300. may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 300. may be taken concurrently.
Related Courses

FW 799A Dissertation: Fishery Biology  Credits: Var[1-18]  (0-0-0)
Course Description: Application of food preparation theories to
modification and evaluation of food products.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
FW 799B Dissertation: Wildlife Biology  Credits: Var[1-18]  (0-0-0)
Course Description: Application of food preparation theories to
modification and evaluation of food products.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Courses
FSHN 125 Food and Nutrition in Health  Credits: 2  (2-0-0)
Course Description: Nutritional quality and safety of food related to
human health.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
FSHN 150 Survey of Human Nutrition  Credits: 3  (3-0-0)
Course Description: Basic nutrition principles and concepts; their
application to personal health and interactions with societal and
environmental issues.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 192 First Year Seminar  Credit: 1  (0-0-1)
Course Description: Facilitate a successful transition to college for new
incoming students by emphasizing personal growth and identifying
campus resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 300 Food Principles and Applications  Credits: 3  (3-0-0)
Course Description: Application of food preparation theories to
modification and evaluation of food products.
Prerequisite: (CHEM 103 or CHEM 107 or CHEM 111) and (FSHN 150).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 301 Food Principles and Applications Laboratory  Credits: 2  (0-6-0)
Course Description: Techniques and manipulative skills for preparation
and evaluation of standard and modified food products.
Prerequisite: FSHN 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
FSHN 350 Human Nutrition  Credits: 3  (3-0-0)
Course Description: Metabolism of macro and micronutrients;
physiologic basis underlying dietary recommendations for human health.
Nutrients, dietary requirements for physical well-being; evaluation of
various diets.
Prerequisite: (BMS 300, may be taken concurrently) and (CHEM 245 or
CHEM 341).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 360 Nutrition Assessment  Credits: 2  (2-0-0)
Course Description: Principles of anthropometric, dietary, and
biochemical assessment of nutritional status.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 386A Practicum: Food Service Management  Credits: 2  (0-0-4)
Course Description: Application of food preparation theories to
modification and evaluation of food products.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
FSHN 386B Practicum: Gerontology  Credits: 3  (0-0-9)
Course Description: Principles of anthropometric, dietary, and
biochemical assessment of nutritional status.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
FSHN 386C Practicum: School Nutrition  Credits: 3  (0-0-9)
Course Description: Principles of anthropometric, dietary, and
biochemical assessment of nutritional status.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
FSHN 392 Dietetic Practice Seminar  Credit: 1  (0-0-1)
Course Description: Pre-professional skills to prepare students for the
pursuit of careers in the field of dietetics.
Prerequisite: (CHEM 107 with a minimum grade of B and CHEM 108
with a minimum grade of B or CHEM 111 with a minimum grade of B and
CHEM 112 with a minimum grade of B and CHEM 113 with a minimum
grade of B) and (LIFE 102 with a minimum grade of B or BZ 111 with
a minimum grade of B and BZ 110 with a minimum grade of B) and
(CHEM 107 with a minimum grade of B and CHEM 108 with a minimum
grade of B) and (FSHN 150, may be taken concurrently) and
(CHEM 245 or CHEM 341).
Registration Information: 3.000 overall GPA.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 428 Nutrition Teaching and Counseling Techniques  Credits: 3  (3-0-0)
Course Description: Objectives, principles, and organization of subject
matter for nutrition education and counseling.
Prerequisite: FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Graduate Program in Food Science and Human Nutrition

The Graduate Program in Food Science and Human Nutrition is designed to provide students with a strong foundation in the science of food and human nutrition, as well as the skills necessary to pursue careers in a variety of fields related to these disciplines. The program offers a range of courses that cover topics such as food science, human nutrition, and dietetics. Students have the opportunity to specialize in areas such as food science, nutrition, and dietetics, and to conduct research under the guidance of experienced faculty members. The program also offers opportunities for students to participate in practice-based learning experiences, such as practicums and internships, to gain hands-on experience and develop professional skills. Graduates of the program are well-prepared for careers in a variety of fields, including food science, nutrition, dietetics, and related fields, as well as for further study in the field of food science and human nutrition.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Term Offered</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSHN 444</td>
<td>Nutrition and Aging</td>
<td>1</td>
<td>Fall, Spring</td>
<td>FSHN 150</td>
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<td>Course Description</td>
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<td></td>
<td>Effect of aging on nutrient needs and impact of nutrition on successful aging and health in the elderly.</td>
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<td></td>
<td>Registration Information</td>
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<td></td>
<td>Admission to Gerontology Interdisciplinary Studies Program can be substituted for FSHN 150. Credit not allowed for both FSHN 444 and FSHN 459. Sections may be offered: Online.</td>
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<td>Prerequisite</td>
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<td>FSHN 350</td>
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<td>Terms Offered</td>
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<td>Fall, Spring, Summer</td>
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<td>Grade Mode</td>
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<td>Traditional</td>
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<td>Special Course Fee</td>
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<td>No.</td>
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<tr>
<td>FSHN 445</td>
<td>Early Childhood Health, Safety, and Nutrition</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
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<td></td>
<td>Credits</td>
<td>0-3</td>
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<td>Also Offered</td>
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<td>As: HDFS 445.</td>
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<td></td>
<td>Course Description</td>
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<td></td>
<td>Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.</td>
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<td>Prerequisite</td>
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<td>HDFS 310 or PSY 260</td>
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<td>Registration Information</td>
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<td>Offered as an online course only.</td>
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<td>Terms Offered</td>
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<td>Fall, Summer, Summer</td>
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<td>Grade Mode</td>
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<td>Traditional</td>
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<td>Special Course Fee</td>
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<td>No.</td>
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<tr>
<td>FSHN 450</td>
<td>Medical Nutrition Therapy</td>
<td>5</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
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<td>Credits</td>
<td>4-2-0</td>
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<td>Course Description</td>
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<td></td>
<td>Use of nutrition therapy in the treatment of acute conditions and chronic disease states.</td>
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<td>Prerequisite</td>
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<td>BMS 300 and FSHN 350</td>
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<td>Registration Information</td>
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<td>Must register for lecture and laboratory.</td>
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<td>Terms Offered</td>
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<td>Fall.</td>
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<td>Grade Mode</td>
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<td>Special Course Fee</td>
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<td>FSHN 451</td>
<td>Community Nutrition</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
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<td>Credits</td>
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<td>Course Description</td>
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<td>Influences on nutritional status, assessment of nutrition problems and needs, planning and evaluation of nutrition intervention programs.</td>
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<td>Prerequisite</td>
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<td>FSHN 350, may be taken concurrently.</td>
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<td>Term Offered</td>
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<td>Fall.</td>
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<td>Special Course Fee</td>
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<tr>
<td>FSHN 455</td>
<td>Food Systems: Impact on Health/Food Security</td>
<td>2</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
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<td>Credits</td>
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<td>Course Description</td>
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<td>Conventional and alternative food systems and their impact on nutrition, health, food security, and the environment.</td>
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<td>Prerequisite</td>
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<td>FSHN 350 or FTEC 447</td>
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<td>Term Offered</td>
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<td>Fall.</td>
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<td>Grade Mode</td>
<td></td>
<td></td>
<td>Traditional</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 459</td>
<td>Nutrition in the Life Cycle</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>3-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Nutritional aspects associated with each phase of human life cycle including pregnancy, infancy, childhood, adolescence, and early and late adulthood.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>FSHN 350</td>
</tr>
<tr>
<td></td>
<td>Registration Information</td>
<td></td>
<td></td>
<td>Credit not allowed for both FSHN 459 and FSHN 444.</td>
</tr>
<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall.</td>
</tr>
<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Traditional</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 470</td>
<td>Integrative Nutrition and Metabolism</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>3-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Influence of nutrition on roles and action of hormones and gene expression on metabolism.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>BC 351 and FSHN 350</td>
</tr>
<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer</td>
</tr>
<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Traditional</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 484</td>
<td>Supervised College Teaching</td>
<td>Var[1-3]</td>
<td>Fall, Spring</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>0-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Supervised off-campus experience in nutrition.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>FSHN 350</td>
</tr>
<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer</td>
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<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Instructor Option</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 486A</td>
<td>Practicum: Counseling</td>
<td>Var[1-3]</td>
<td>Fall, Spring</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>0-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Supervised off-campus experience in nutrition.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>FSHN 350</td>
</tr>
<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer</td>
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<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Instructor Option</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 486B</td>
<td>Practicum: Nutrition</td>
<td>Var[1-3]</td>
<td>Fall, Spring</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>0-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Supervised off-campus experience in nutrition.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>FSHN 350</td>
</tr>
<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer</td>
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<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Instructor Option</td>
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<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 486C</td>
<td>Practicum: Food Service Management</td>
<td>Var[1-3]</td>
<td>Fall, Spring</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>0-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Supervised off-campus experience in food service management.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>FSHN 310</td>
</tr>
<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer</td>
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<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Instructor Option</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 492</td>
<td>Seminar in Dietetics and Nutrition</td>
<td>2</td>
<td>Spring</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>0-0-2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Capstone seminar in nutrition and dietetics.</td>
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<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Restriction</td>
<td></td>
<td></td>
<td>Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.</td>
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<tr>
<td></td>
<td>Registration Information</td>
<td></td>
<td></td>
<td>Senior standing</td>
</tr>
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<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Spring.</td>
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<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Instructor Option</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 495A</td>
<td>Independent Study: Nutrition</td>
<td>Var[1-18]</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>0-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Supervised off-campus experience in nutrition.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>None.</td>
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<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer</td>
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<tr>
<td></td>
<td>Grade Mode</td>
<td></td>
<td></td>
<td>Instructor Option</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>FSHN 495B</td>
<td>Independent Study: Food Service Management</td>
<td>Var[1-18]</td>
<td>Fall, Spring, Summer</td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Credits</td>
<td>0-0-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Course Description</td>
<td></td>
<td></td>
<td>Supervised off-campus experience in nutrition.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite</td>
<td></td>
<td></td>
<td>None.</td>
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<tr>
<td></td>
<td>Terms Offered</td>
<td></td>
<td></td>
<td>Fall, Spring, Summer</td>
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<td></td>
<td>Grade Mode</td>
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<td></td>
<td>Instructor Option</td>
</tr>
<tr>
<td></td>
<td>Special Course Fee</td>
<td></td>
<td></td>
<td>No.</td>
</tr>
</tbody>
</table>
FSHN 496A Group Study in Dietetics and Nutrition: Energy, Weight Management Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496B Group Study in Dietetics and Nutrition: Sustainable Food Issues Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496C Group Study in Dietetics and Nutrition: Nutrition and Chronic Disease Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496D Group Study in Dietetics and Nutrition: Nutrition for Athletes Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496E Group Study in Dietetics and Nutrition: Food Safety Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496F Group Study in Dietetics and Nutrition: Service Marketing Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496G Group Study in Dietetics and Nutrition: Food and Consumer Issues Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496H Group Study in Dietetics and Nutrition: Public Health and Policy Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 496I Group Study in Dietetics and Nutrition: Special Topics Credit: 1 (1-0-0)
Course Description: Current topics in nutrition and professional skills for the dietetics profession.
Prerequisite: FSHN 350.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 500 Food Systems, Nutrition, and Food Security Credits: 2 (2-0-0)
Course Description: Global and local food systems and their potential influence on nutrition and food security.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 501 Research Methods in Dietetics Credits: 3 (0-0-3)
Course Description: Testing and generating theory. Methods for collecting and analyzing quantitative and qualitative data, critique of research and proposal development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 503 Issues in Dietetics Practice Credits: 3 (0-0-3)
Course Description: Environment in which foodservice, hospitality, and healthcare organizations operate; impact of change on hospitality and healthcare organizations.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 504 Micronutrients Credits: 3 (0-0-3)
Course Description: Coordination of structure and function related to metabolic needs as a basis for evaluating micronutrient needs in normal or altered metabolic states.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 505  Nutrition and Physical Activity in Aging Credits: 3 (0-0-3)
Course Description: Physiological changes during aging and impacts on health and disease; focus on successful aging with emphasis on physical activity and nutrition.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 506  Nutrition and Human Performance Credits: 3 (0-0-3)
Course Description: Relationship of specific nutrients and optimal nutrition to physical efficiency and performance.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 507  Nutrition Education in the Community Credits: 3 (0-0-3)
Course Description: Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research and evaluation.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 508  International Nutrition and World Hunger Credits: 3 (0-0-3)
Course Description: Magnitude, causes, and nature of hunger and undernurturing; programs and policies to alleviate hunger.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 509  Nutrition Counseling and Education Methods Credits: 3 (0-0-3)
Course Description: Application of learning theories and nutrition counseling with individuals and groups in the community and clinical settings.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 510  Pediatric Clinical Nutrition Credits: 3 (0-0-3)
Course Description: Physiological, biochemical and nutritional aspects of disease processes relevant to infants and children up to 18 years of age.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 511  Maternal and Child Nutrition Credits: 3 (0-0-3)
Course Description: Behavioral, physiological and public health issues impacting dietary and nutritional factors that support growth and development.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics; written permission of instructor. Offered as an online course only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 512  Nutritional Aspects of Oncology Credits: 3 (0-0-3)
Course Description: Relationships between nutrition and cancer including the role of nutrition in specific cancers, cancer prevention and patient management.
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 520  Advanced Medical Nutrition Therapy Credits: 3 (3-0-0)
Course Description: Role of nutrition in etiology and treatment of selected disorders.
Prerequisite: FSHN 550 or FSHN 551.
Registration Information: FSHN 550 or FSHN 551 or admission to GP-IDEA program in Dietetics. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 525  Nutrition Education Theories and Practice Credits: 2 (2-0-0)
Course Description: Examination of current theories, skills, and models used in nutrition education programs as preparation for research and practice.
Prerequisite: FSHN 350.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 540  Nutrigenomics and Advanced Lipid Metabolism Credits: 3 (0-0-3)
Course Description: How nutrients regulate gene expressions (nutrigenetics) and how genotype influences an individual’s nutrient requirements (nutrigenomics).
Prerequisite: None.
Registration Information: Admission to GP-IDEA program in Dietetics. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 550  Advanced Nutritional Science I Credits: 3 (3-0-0)
Course Description: Protein, vitamin, mineral metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 551  Advanced Nutritional Science II  Credits: 3 (3-0-0)
Course Description: Carbohydrate, lipid, energy metabolism; human studies, animal models.
Prerequisite: (BC 351 or BC 403) and (FSHN 350).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 575  Nutrition Education for a Healthy Heart  Credit: 1 (0-0-1)
Course Description: Nutrition-related issues of atherosclerotic cardiovascular disease risk reduction and background in the art/science of facilitating behavior change.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 586  Practicum-Advanced Clinical Nutrition  Credits: Var[1-3] (0-0-0)
Course Description: Principles, strategies and techniques for interviewing, assessing and providing nutrition counseling in community settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587A  Internship: Clinical Dietetics  Credits: 6 (0-18-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587B  Internship: Community Dietetics  Credits: 6 (0-18-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 587C  Internship: Food Service Management  Credits: 6 (0-18-0)
Course Description: Appraisal of literature on human nutritional status.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 590  Workshop  Credits: Var[1-18] (0-0-0)
Course Description: Community nutrition assessment; nutrition program planning and evaluation, nutrition policy analysis.
Prerequisite: FSHN 350.
Restriction: Must be a Graduate, Professional.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 620  Community Nutrition Planning and Evaluation  Credits: 3 (2-0-1)
Course Description: Community nutrition assessment; nutrition program planning and evaluation, nutrition policy analysis.
Prerequisite: FSHN 350.
Restriction: Must be a Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 661  International Nutrition  Credits: 2 (2-0-0)
Course Description: Roles of technological programs and international agencies in meeting nutritional needs.
Prerequisite: FSHN 350.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 660  Women's Issues in Lifecycle Nutrition  Credits: 2 (2-0-0)
Course Description: Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.
Prerequisite: FSHN 459.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
FSHN 696D Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 698A Research: Dietetics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the GP-IDEA program in Dietetics.
Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698B Research: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 698C Research: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

FSHN 699B Thesis: Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 699C Thesis: Food Service Management Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 700 Cellular Nutrition Credits: 2 (2-0-0)
Course Description: Essential nutrient requirements of cells and organs.
Prerequisite: FSHN 550 and FSHN 551 or BC 403 and BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 750 Nutritional Basis of Chronic Disease Credits: 2 (2-0-0)
Course Description: Role of nutrition in the pathogenesis and prevention of specific chronic diseases.
Prerequisite: FSHN 550 and FSHN 551.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FSHN 792 Seminar-Research Topics in Nutrition Credit: 1 (0-0-1)
Course Description: Ph.D. seminar in literature review.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grad Mode: Traditional.
Special Course Fee: No.

FSHN 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FSHN 796 Group Study Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Food Technology-FTEC (FTEC)

Courses

FTEC 110 Food-From Farm to Table Credits: 3 (3-0-0)
Course Description: Commercial food processing, related to preservation and enhancing of food quality, safety, and value.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FTEC 210 Science of Food Fermentation Credits: 3 (2-2-0)
Course Description: Science, history, culture, gastronomy, safety, health, and nutrition aspects of fermented foods and beverages.
Prerequisite: CHEM 107 or CHEM 111 and (LIFE 205 or BZ 111 and BZ 110).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
FTEC 350 Fermentation Microbiology Credits: 2 (2-0-0)
Course Description: Integration of fermentation science, microbiology, and chemistry.
Prerequisite: CHEM 245 or FTEC 210 or LIFE 206 or MIP 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 360 Brewing Processes Credits: 3 (1-4-0)
Course Description: Influence of raw material selection, malting, mashing, boiling, and fermentation on quality of beverages.
Prerequisite: CHEM 245 and FTEC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 360 Brewing Processes Credits: 3 (1-4-0)
Course Description: Influence of raw material selection, malting, mashing, boiling, and fermentation on quality of beverages.
Prerequisite: CHEM 245 and FTEC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 360 Brewing Processes Credits: 3 (1-4-0)
Course Description: Influence of raw material selection, malting, mashing, boiling, and fermentation on quality of beverages.
Prerequisite: CHEM 245 and FTEC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 360 Brewing Processes Credits: 3 (1-4-0)
Course Description: Influence of raw material selection, malting, mashing, boiling, and fermentation on quality of beverages.
Prerequisite: CHEM 245 and FTEC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 400 Food Safety Credits: 3 (3-0-0)
Course Description: Safety of human food emphasizing safe production, processing, marketing, preparation, consumption, and regulations.
Prerequisite: CHEM 107 or CHEM 111.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

FTEC 422 Brewing Analysis and Quality Control Credits: 2 (1-2-0)
Course Description: Assessment, quantification, and control of various aspects of commercial beer production.
Prerequisite: FTEC 460.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 430 Sensory Evaluation of Fermented Products Credits: 2 (1-2-0)
Course Description: Application of sensory evaluation techniques to the study of fermented foods.
Prerequisite: FSHN 301 or FTEC 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 440 Refining and Packaging Technology Credits: 2 (2-0-0)
Course Description: Science, technology, and management of refining and packaging.
Prerequisite: FTEC 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 447 Food Chemistry Credits: 2 (2-0-0)
Course Description: Chemistry of food constituents as related to food quality and stability.
Prerequisite: CHEM 245 or CHEM 345.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 460 Brewing Science and Technology Credits: 3 (2-2-0)
Course Description: Scientific and technical aspects of brewing, fermenting, finishing, and evaluating microbrewed style of lagers and ales.
Prerequisite: (CHEM 245) and (MATH 118).
Registration Information: 21 years of age. Must have completed 60 credits. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

FTEC 465 Food Production Management Credits: 2 (2-0-0)
Course Description: Production, operation, and management techniques used in the food industry at company, local and international levels.
Prerequisite: FTEC 360, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 478 Phytochemicals and Probiotics for Health Credits: 2 (2-0-0)
Course Description: Examination of phytochemistry and probiotic organisms important in human health.
Prerequisite: BC 351.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 487 Internship Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 492 Seminar: Fermentation Science and Food Safety Credits: 2 (1-0-1)
Course Description: Capstone seminar in fermentation science and food safety.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

FTEC 496A Group Study Fermentation Science: Current Issues Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

FTEC 496B Group Study Fermentation Science: Functional Foods in Health Credit: 1 (0-0-1)
Course Description:
Prerequisite: FSHN 350 or FTEC 360.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
FTEC 570 Food Product Development Credits: 2 (2-0-0)  
Course Description: Food product concepts, feasibility, and evaluation.  
Prerequisite: FTEC 447.  
Term Offered: Fall (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.  
FTEC 572 Food Biotechnology Credits: 2 (2-0-0)  
Course Description: Interrelationships among microorganisms, food processing methods, advances in biotechnology and food quality, spoilage, shelf-life and safety.  
Prerequisite: MIP 334.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  
FTEC 574 Current Issues in Food Safety Credits: 2 (2-0-0)  
Course Description: Current food safety issues from field to table; microbiological, consumer, processing, and agricultural issues.  
Prerequisite: None.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  
FTEC 576 Cereal Science Credits: 2 (2-0-0)  
Course Description: Chemistry and functionality of cereal grain components and their importance in human nutrition.  
Prerequisite: FTEC 447.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  
FTEC 578 Bioactives and Probiotics for Health Credits: 3 (2-0-1)  
Course Description: Mechanisms through which functional foods and probiotics modulate intracellular signal transduction and protein expression in chronic disease states.  
Prerequisite: (BC 351) and (LIFE 205 or MIP 300).  
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.  
Terms Offered: Fall, Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.  
FTEC 698 Research Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  
FTEC 699 Thesis Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  
FTEC 799 Dissertation Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

Forest & Rangeland Stewardship-F (F)  
Courses  
F 224 Wildland Fire Measurements Credit: 1 (0-2-0)  
Course Description: Wildland fire control and use measurements: fuels, weather, topography, fire behavior, and fire ecology.  
Prerequisite: None.  
Registration Information: Required field trips.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
F 230 Forestry Field Measurements Credits: 2 (0-4-0)  
Course Description: Develop field skills using maps, compasses, and aerial photos; photo interpretation; tree and stand measurements; stand volume and value estimates.  
Prerequisite: None.  
Term Offered: Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
F 310 Forest and Rangeland Ecogeography Credits: 3 (2-2-0)  
Also Offered As: RS 310.  
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common in North America.  
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.  
Registration Information: Must have concurrent registration in F 312. Must register for lecture and laboratory. Credit not allowed for both F 310 and RS 310.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  
F 311 Forest Ecology Credits: 3 (3-0-0)  
Course Description: Relationships of ecological concepts to the dynamics of forest ecosystems.  
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
F 312 Dendrology Lab Credit: 1 (0-2-0)  
Course Description: Identification of characteristic trees common to North American forests.  
Prerequisite: F 310, may be taken concurrently.  
Registration Information: Must have concurrent registration in F 310.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
F 321 Forest Biometry Credits: 3 (2-2-0)
Course Description: Measurement and estimation of timber in logs, trees, and stands. Sampling with varying probabilities.
Prerequisite: (NR 220 and F 230) and (STAT 201 or STAT 301) and (MATH 141 or MATH 155).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 322 Economics of the Forest Environment Credits: 3 (3-0-0)
Course Description: Economic principles and techniques applied to forested environments.
Prerequisite: AREC 202 or ECON 202 or ECON 240 or AREC 240.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 324 Fire Effects and Adaptations Credits: 3 (3-0-0)
Course Description: Introduction to fire ecology including fire history, ecosystem effects, and organism responses.
Prerequisite: LIFE 320 or LAND 220 or LIFE 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 325 Silviculture Credits: 3 (3-0-0)
Course Description: Principles of silviculture and their application to major forest types of United States.
Prerequisite: F 230 and F 311 and NR 220.
Registration Information: Credit not allowed for both F 325 and NR 326.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 326 Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Physical and managerial principles influencing fire, how fires shape our forests and approaches used to manage wildland fire.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

F 330 Timber Harvesting and the Environment Credits: 3 (2-2-0)
Course Description: Principles of timber harvesting and effects of logging on the environment.
Prerequisite: F 230 or F 321.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 331 Wood Products in Society Credits: 3 (2-2-0)
Course Description: Role of wood products in society; spectrum of wood products; some field trips.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

F 421 Forest Stand Management Credits: 4 (3-3-0)
Course Description: Forest management plan preparation: forest condition and health assessment; evaluation of silvicultural treatments; implementation and monitoring.
Prerequisite: F 230 and F 321 and F 322 and F 325.
Registration Information: Must register for lecture and laboratory. 
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

F 422 Quantitative Methods in Forest Management Credits: 3 (2-2-0)
Course Description: Design and analysis of optimization and nonoptimization models in forest managerial operations.
Prerequisite: F 321 and F 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

F 425 Advanced Wildland Fire Behavior and Management Credits: 3 (3-0-0)
Course Description: Advanced strategies, tools, and techniques for wildland fire management: prediction, prevention, suppression, and use for resource benefit.
Prerequisite: F 326 and NR 319.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 430 Forestry Field Practices Credits: 3 (1-4-0)
Course Description: Forestry field course, S212 saw certification, collect stand inventory data, develop and implant stand prescription, and harvest and process trees.
Prerequisite: F 330 and F 421.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

F 466 Urban and Community Forestry Credits: 3 (3-0-0)
Also Offered As: HORT 466.
Course Description: Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite: F 310 or RS 310 or HORT 221.
Registration Information: Credit not allowed for both F 466 and HORT 466.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

F 487 Professional Forestry Internship Credits: Var[3-12] (0-0-0)
Course Description: Professional-level field experience with forestry organization.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
F 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
F 510 Ecophysiology of Trees Credits: 3 (2-3-0)
Course Description: Environmental factors affecting physiology of woody plants; emphasis on water relations in trees and importance of water in physiological processes.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 520 Advanced Quantitative Methods in Forestry I Credits: 3 (3-0-0)
Course Description: Design and analysis of optimization models in forest management operations: linear, goal, and dynamic programming.
Prerequisite: F 322 and MATH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
F 521 Advanced Quantitative Methods in Forestry II Credits: 3 (2-2-0)
Course Description: Analysis of forest inventory information; dynamic and stochastic models oriented to decision making and research in forestry.
Prerequisite: F 520.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 522 Advanced Forest Economics Credits: 3 (3-0-0)
Course Description: Analysis of forestry issues: financial maturity, management intensity, federal policy, taxation, natural environments, and silviculture.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
F 524 Forest Fire Meteorology and Behavior Credits: 3 (2-2-0)
Course Description: Effects of atmospheric processes on wild and prescribed fires; interrelationships of weather, fuels, and topography on forest and range fires.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
F 525 Silvicultural Practices Credits: 4 (3-0-1)
Course Description: Comprehensive coverage of silvicultural practices as applied in US forestry.
Prerequisite: F 311.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 540 Fuels, Vegetation, and Fire Management Credits: 3 (2-3-0)
Course Description: Develop, test and display the impact of alternative fuels and vegetation treatments on vegetation development, fuels and fire behavior.
Prerequisite: None.
Registration Information: Admission to the Continuing Education in Fuels Management program through the Office of Conference Services.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
F 541 Data Analysis/Interpretation-Fire Managers Credits: 3 (3-0-0)
Course Description: Knowledge and skills for complex analyses of fire information.
Prerequisite: None.
Registration Information: Employment as a wildfire manager. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 542 Wildland Fire Economics and Management Credits: 3 (3-0-0)
Course Description: Managerial economics and management techniques applied to wildland fire situations.
Prerequisite: None.
Registration Information: Employment as wildland fire manager.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 544 Decision Methods for Fire Managers Credits: 3 (3-0-0)
Course Description: Application of decision methods, including optimization techniques, finance and decision trees to initial attack and fuels management problems.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
F 593 Seminar-Fire Science Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
F 624 Fire Ecology Credits: 3 (2-2-0)
Course Description: Fire in forest and range ecosystems; principles and techniques for evaluating fire effects on vegetation, soils, watersheds, and wildlife.
Prerequisite: ECOL 505 or F 310 or F 311 or LIFE 320 or NR 565 or NR 578 or RS 300 or RS 310 or RS 452.
Restriction: Must be a Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
F 625  Ecology of Forest Production  Credits: 3 (3-0-0)  
Also Offered As: ESS 625.  
Course Description: Develops student expertise in understanding carbon and nutrient flows in forests.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Must have completed one 300-level course in ECOL. Credit not allowed for both F 625 and ESS 625. Sections may be offered: Online.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

F 693  Seminar  Credit: 1 (0-0-1)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

F 695  Independent Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

F 698  Research  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

F 699  Thesis  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

F 721  Forest Policy  Credits: 3 (3-0-0)  
Course Description: Policies and institutions affecting management of forest lands in U.S.  
Prerequisite: NR 567.  
Restriction: Must be a: Graduate, Professional.  
Term Offered: Spring (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

F 798  Research  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.
GEAL 8403 English as a Second Language - General English Language Skills Workshop CEU: 1.5 (0-0-1.5)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Students will practice using language and technology to create integrated projects related to topics studied in the core courses.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8404 English as a Second Language - General English Language Skills Workshop CEU: 1.5 (0-0-1.5)
Course Description: Not for academic credit. English as a Second Language for non-native speakers. Students will practice using language and technology to create integrated projects related to topics studied in the core courses.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8411 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8412 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8413 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8414 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8415 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8416 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8417 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

GEAL 8418 English as a Second Language – General English Everyday English CEU: 1.87 (1.875-0-0)
Course Description: Prerequisite: None.
Prerequisite: None.
Registration Information: English as a Second Language for non-native speakers. Students will learn the vocabulary and grammar needed to communicate, orally or in writing, in common, everyday situations.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.
GEAL 8421  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8422  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8423  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8424  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8425  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8426  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8427  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8428  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

GEAL 8429  English as a Second Language – General English Cultural Issues  
Course Description: Prerequisite: None.  
Prerequisite: None.  
Registration Information: English as a Second Language for non-native speakers. Through reading and listening passages, students will learn the vocabulary and grammar needed to discuss and write about various cultural topics from around the world.  
Terms Offered: Fall, Spring, Summer.  
Special Course Fee: No.  

Geography-GR (GR)

Courses

GR 100  Introduction to Geography (GT-SS2)  Credits: 3 (3-0-0)  
Course Description: Major geographic themes applied to selected regions; physical environment, human-land relationships, regional analysis.  
Prerequisite: None.  
Registration Information: Sections may be offered: Online.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  
Additional Information: Social & Behavioral Sciences 3C, Geography (GT-SS2).
GR 210  Physical Geography  Credits: 3 (3-0-0)
Also Offered As: ESS 210.
Course Description: Energy, mass budget, and human impacts on atmosphere, hydrosphere, and continental land surfaces.
Prerequisite: None.
Registration Information: Credit not allowed for both GR 210 and ESS 210.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 303  Mountain Geography  Credits: 3 (3-0-0)
Course Description: The physical and human dimensions of mountains. Examples from mountains around the world with case studies from Colorado.
Prerequisite: GR 100.
Terms Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 304  Sustainable Watersheds  Credits: 3 (3-0-0)
Also Offered As: WR 304.
Course Description: Effects of climate, land use, and water use on the sustainability of water quantity and quality.
Prerequisite: None.
Registration Information: Completion of the AUCC 1B mathematics requirement. Credit not allowed for both GR 304 and WR 304.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Biological & Physical Sciences 3A.

GR 311  GIS for Social Scientists  Credits: 3 (1-4-0)
Course Description: Applications of GIS techniques useful to the social sciences. Mapping techniques and GIS toolkits are practiced in lab.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 315  Quantitative Geographical Methods  Credits: 3 (3-0-0)
Course Description: Methods to collect, analyze, display, and model geographic data.
Prerequisite: GR 100.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 320  Cultural Geography  Credits: 3 (3-0-0)
Course Description: Geographic analysis of cultural phenomena, elements emphasizing human-land relationships and spatial patterns of agriculture, cities, language, religion.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

GR 323  Remote Sensing and Image Interpretation  Credits: 3 (2-2-0)
Also Offered As: NR 323.
Course Description: Remote sensing systems and applications; characteristics of photographic, scanner and radar images; imagery interpretations.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 323, GR 503, NR 323, NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 330  Urban Geography  Credits: 3 (3-0-0)
Course Description: Spatial distribution of urban areas and the geographic similarities and contrasts that exist between and within them.
Prerequisite: GR 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 331  Geography of Farming Systems  Credits: 3 (3-0-0)
Course Description: Geographic analysis of farming systems worldwide and by region; their development over time, human-land relationships, and spatial patterns.
Prerequisite: GR 100.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 345  Geography of Hazards  Credits: 3 (3-0-0)
Course Description: Causes, effects, distributional patterns, and human adjustments to environmental hazards.
Prerequisite: GR 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 348  Biogeography  Credits: 3 (3-0-0)
Course Description: Species distribution of plants and animals in relation to earth history and environments, evolution, and ecology.
Prerequisite: GR 100.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 410  Climate Change: Science, Policy, Implications  Credits: 3 (3-0-0)
Course Description: Implications and consequences for earth systems including the cryosphere, hydrosphere, and biosphere.
Prerequisite: GR 100.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 415  The Geography of Commodities  Credits: 3 (3-0-0)
Course Description: Social relations, international trade, and environmental impacts surrounding the production, transportation, exchange and consumption of commodities.
Prerequisite: GR 100.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
GR 420  Spatial Analysis with GIS  Credits: 4 (3-2-0)
Course Description: Theory, application of geographic information systems for spatial analysis; conceptual basis of GIS, nature and use of geographic data, case studies.
Prerequisite: GR 000 to 99999 - at least 3 credits.
Registration Information: Credit not allowed for both GR 420 and NR 322.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GR 430  Land Change Science and Remote Sensing  Credits: 3 (3-0-0)
Course Description: Local case studies and global cases of land-use/land-cover changes in rural, peri-urban, and urban areas.
Prerequisite: GR 100.
Registration Information: Junior standing.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 431  Land Change Science Lab  Credit: 1 (0-3-0)
Course Description: Utilize advanced remote sensing techniques and satellite images, air photos, and ancillary data to investigate land-use and land-cover changes.
Prerequisite: GR 303 or NR 323 or GR 410 or GR 415.
Registration Information: Must have concurrent registration in GR 430.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 448  Forest Biogeography and Climate Change  Credits: 3 (3-0-0)
Course Description: Forest adaptation and conservation in relation to global change with a focus on climate change.
Prerequisite: ESS 211 or ESS 311 or F 311 or GR 100 or GR 210 or ESS 210 or GR 303 or GR 348 or GR 410.
Registration Information: Junior standing.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GR 487  Internship  Credits: Var[1-9] (0-0-0)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of principles of geography.
Prerequisite: GR 100 to 499 - at least 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GR 493  Capstone  Credit: 1 (1-0-0)
Course Description: Exploration of the linkages among geographic sub-fields and other natural and social sciences as well as how professional geographers approach issues.
Prerequisite: GR 303 with a minimum grade of A++, may be taken concurrently or GR 410 with a minimum grade of A++, may be taken concurrently or GR 415 with a minimum grade of A++, may be taken concurrently or GR 430 with a minimum grade of A++, may be taken concurrently.
Term Offered: Fall. Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GR 495  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GR 503  Remote Sensing and Image Analysis  Credits: 4 (3-3-0)
Also Offered As: NR 503.
Course Description: Interpretation and analysis of photographic, multispectral scanner, and radar data; sensor systems; applications to resource management.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GR 503, GR 323, NR 323, NR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Geosciences-GEOL (GEOL)

Courses

GEOL 110  Introduction to Geology--Parks and Monuments  Credits: 3 (3-0-0)
Course Description: Credit allowed for only one of the following GEOL 110, GEOL 120, GEOL 122, GEOL 124, GEOL 150. Offered only online.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 120  Exploring Earth: Physical Geology (GT-SC2)  Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to earth processes, materials, resources, and hazards.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 120, GEOL 122, GEOL 124, GEOL 150. Required field trips.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 121  Introductory Geology Laboratory (GT-SC1)  Credit: 1 (0-2-0)
Course Description: Laboratory applications of introductory geology.
Prerequisite: GEOL 120, may be taken concurrently or GEOL 122, may be taken concurrently or GEOL 124, may be taken concurrently.
Registration Information: Credit not allowed for both GEOL 121 and GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).
GEOL 122  The Blue Planet: Geology of Our Environment (GT-SC2)  Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to geological processes, natural hazards, earth resources, and their impacts on society.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 120, GEOL 122, GEOL 124, GEOL 150.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 124  Geology of Natural Resources (GT-SC2)  Credits: 3 (3-0-0)
Course Description: Develops scientific understanding through introduction to the origin, use and environmental impact of geological resources extracted from the Earth.
Prerequisite: None.
Registration Information: Credit allowed for only one of the following: GEOL 120, GEOL 122, GEOL 124, GEOL 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

GEOL 150  Physical Geology for Scientists and Engineers  Credits: 4 (3-3-0)
Course Description: Earth materials, structures, and surface processes. Geologic analysis using field data, topographic and geologic maps, and aerial photos.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: GEOL 120, GEOL 122, GEOL 124, GEOL 150. Credit not allowed for both GEOL 150 and GEOL 121. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 154  Historical and Analytical Geology  Credits: 4 (3-3-0)
Course Description: Physical and biological history of Earth with introduction to laboratory, computer, and field techniques.
Prerequisite: GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 232  Mineralogy  Credits: 3 (2-3-0)
Course Description: Crystal structures, crystal chemistry, rock-forming and economically important minerals, crystal growth and defects, physical properties of minerals.
Prerequisite: (CHEM 111, may be taken concurrently) and (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 124 or MATH 155 or MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 250  The Solid Earth  Credits: 3 (2-2-0)
Course Description: Structure, flow, and composition of the deep Earth; introduction to geophysics; tests of plate tectonic theory.
Prerequisite: (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150) and (MATH 124) and (MATH 125 or MATH 155 or MATH 160 or MATH 161 or MATH 255).
Registration Information: Must register for lecture and laboratory. Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 322  Optical Mineralogy  Credits: 2 (1-2-0)
Course Description: Fundamental light optics in crystalline substances; optical indicatrix; isotropic, uniaxial, and biaxial substances; common minerals in thin section.
Prerequisite: GEOL 232, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 342  Paleontology  Credits: 3 (2-3-0)
Course Description: Description of invertebrates, vertebrates, and plants and their distribution in earth history.
Prerequisite: GEOL 154.
Registration Information: Must register for lecture and laboratory. Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 344  Stratigraphy and Sedimentology  Credits: 4 (3-3-0)
Course Description: Description, genesis, correlation, and age of sediments, sedimentary rocks and layered rock sequences.
Prerequisite: GEOL 154 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

GEOL 364  Igneous and Metamorphic Petrology  Credits: 4 (3-3-0)
Course Description: Identification, classification, geochemistry, petrogenesis of igneous and metamorphic rocks; textural interpretation of hand samples and thin sections.
Prerequisite: GEOL 232 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 366  Sedimentary Petrology and Geochemistry  Credits: 4 (3-3-0)
Course Description: Composition, identification, and classification of sedimentary rocks; geochemical processes affecting sedimentary rocks and surficial deposits.
Prerequisite: CHEM 113 and GEOL 154 and GEOL 364.
Registration Information: Must register for lecture and laboratory. Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Term Offered</th>
<th>Prerequisite</th>
<th>Registration Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 432</td>
<td>Applied Geophysics</td>
<td>3-2-0</td>
<td>Spring</td>
<td>GEOL 372 and MATH 161 and PH 142.</td>
<td>Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>GEOL 434</td>
<td>Geologic Field Methods</td>
<td>3-1-4</td>
<td>Spring</td>
<td>GEOL 344 and GEOL 372, may be taken concurrently.</td>
<td>Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>GEOL 436</td>
<td>Geology Summer Field Course</td>
<td>6-0-18</td>
<td>Summer</td>
<td>GEOL 364 and GEOL 376.</td>
<td>Reqd field trips.</td>
</tr>
<tr>
<td>GEOL 442</td>
<td>Hydrogeology</td>
<td>4-3-0</td>
<td>Fall</td>
<td>GEOL 154, PH 141, or (GEOL 120 or GEOL 122 or GEOL 124 or GEOL 150 or MATH 161 or MATH 255 or CHEM 111).</td>
<td>Must register for lecture and laboratory.</td>
</tr>
<tr>
<td>GEOL 444</td>
<td>Mineral Deposits</td>
<td>3-2-3</td>
<td>Spring</td>
<td>GEOL 120, may be taken concurrently and GEOL 122 or GEOL 124 or GEOL 150.</td>
<td>Must register for lecture and laboratory.</td>
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<tr>
<td>GEOL 446</td>
<td>Environmental Geology</td>
<td>3-3-0</td>
<td>Spring</td>
<td>GEOL 120, may be taken concurrently and GEOL 122 or GEOL 124 or GEOL 150.</td>
<td>Must register for lecture and laboratory.</td>
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<tr>
<td>GEOL 447</td>
<td>Geologic Field Methods</td>
<td>3-0-0</td>
<td>Spring</td>
<td>GEOL 120, may be taken concurrently and GEOL 122 or GEOL 124 or GEOL 150.</td>
<td>Must register for lecture and laboratory.</td>
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<tr>
<td>GEOL 452</td>
<td>Hydrogeology</td>
<td>4-3-0</td>
<td>Spring</td>
<td>GEOL 120, may be taken concurrently and GEOL 122 or GEOL 124 or GEOL 150.</td>
<td>Must register for lecture and laboratory.</td>
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<tr>
<td>GEOL 492</td>
<td>Independent Study: Environmental/Engineering</td>
<td>Var[1-18]</td>
<td>Fall, Spring</td>
<td>GEOL 120, may be taken concurrently and GEOL 122 or GEOL 124 or GEOL 150.</td>
<td>Must register for lecture and laboratory.</td>
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</tbody>
</table>
GEOL 494B Independent Study: Geomorphology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494C Independent Study: Mineralogy/Petrology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494D Independent Study: Geoscience Field Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494E Independent Study: Paleontology/Stratigraphy Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494F Independent Study: Sedimentology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494G Independent Study: Structural Geology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 494I Independent Study: Geophysics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 498 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 530 Advanced Petrology Credits: 3 (2-2-0)
Course Description: Igneous and metamorphic processes and products explored through thermodynamics, phase equilibria, and textural analysis.
Prerequisite: GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 543 Carbonate Sedimentology Credits: 2 (1-3-0)
Course Description: Recognition of carbonate grains, cement types, and carbonate depositional environments, and their response to sea-level changes.
Prerequisite: GEOL 344.
Registration Information: Junior standing.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 546 Sedimentary Basin Analysis Credits: 4 (3-3-0)
Course Description: Sedimentologic data base, correlation, mapping, facies models, classification, and evolution of sedimentary basins. Applications to petroleum exploration.
Prerequisite: GEOL 344.
Registration Information: Must register for lecture and laboratory.
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

GEOL 547 Ore Deposit Geochemistry Credits: 3 (3-0-0)
Course Description: Geochemical techniques applied to the geology, exploration, and environmental analysis of ore deposits.
Prerequisite: GEOL 447.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 551 Groundwater Modeling Credits: 3 (3-0-0)
Course Description: Groundwater modeling from a geologic perspective. Conceptual models and computer modeling of groundwater flow and solute transport.
Prerequisite: CIVE 423 or GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 552 Advanced Topics in Hydrogeology Credits: Var[2-3] (0-0-0)
Course Description: Current literature, new techniques, legislative and political developments in hydrogeology, and appropriate case histories.
Prerequisite: GEOL 452.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 560 Clay Mineralogy Credits: 3 (2-3-0)
Course Description: Crystallography and chemistry of clay minerals. Applications to geology, engineering, and soil sciences, x-ray analysis of clays.
Prerequisite: GEOL 364.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
GEOL 562 Statistical Data Analysis in Earth Resources Credits: 3 (3-0-0)
Course Description: Statistical parameters, sequential data, map analysis, and multivariate data.
Prerequisite: STAT 340 and STAT 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 565 Petroleum Geochemistry and Geology Credits: 3 (3-0-0)
Course Description: Geochemistry and geology of hydrocarbon generation, migration, and accumulation. Applications to hydrocarbon exploration.
Prerequisite: GEOL 366 and GEOL 372.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 567 Sedimentary Geochemistry Credits: 3 (3-0-0)
Course Description: Geochemical processes affecting sedimentary rocks and other surficial materials.
Prerequisite: GEOL 366.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 570 Plate Tectonics Credits: 3 (3-0-0)
Course Description: Examination of the historical development of plate tectonic theory and its application to understanding geological processes.
Prerequisite: GEOL 364 and GEOL 372 and PH 142.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 571 Advanced Structural Geology Credits: 4 (3-3-0)
Course Description: Rheology, deformation mechanisms, structural associations and advanced methods of structural analysis.
Prerequisite: GEOL 436.
Registration Information: Must register for lecture and laboratory. Required field trips. Graduate standing can substitute for prerequisite course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 572 Geodynamics Credits: 3 (3-0-0)
Course Description: Continuum mechanics applied to understanding of deformation within the Earth. Stress and strain as tensors, with application to various geological settings; plate flexure and isostasy; steady state and time dependent heat conduction in a geological context; fluid mechanics of the Earth.
Prerequisite: GEOL 250 and MATH 261 and PH 141.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 574 Exploration Seismology Credits: 3 (3-0-0)
Course Description: Seismic exploration methods, including theory, data acquisition, and data processing.
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 576 Global Seismology Credits: 4 (3-2-0)
Course Description: Quantitative introduction to seismology; basics of seismic data analysis; fundamentals of wave propagation; earthquakes; structure of the Earth.
Prerequisite: PH 142 and MATH 261.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 577 Sedimentary Geochemistry Credits: 3 (3-0-0)
Course Description: Geochemical processes affecting sedimentary rocks and other surficial materials.
Prerequisite: GEOL 366.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 578 Solid Earth Inverse Methods and Practices Credits: 3 (3-0-0)
Prerequisite: (MATH 161 or MATH 255) and (MATH 229) and (STAT 301 or STAT 315).
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 579 Advanced Geophysical Methods Credits: 3 (3-0-0)
Course Description: Continuum mechanics applied to understanding of deformation within the Earth. Stress and strain as tensors, with application to various geological settings; plate flexure and isostasy; steady state and time dependent heat conduction in a geological context; fluid mechanics of the Earth.
Prerequisite: GEOL 250 and MATH 261 and PH 141.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 580 Subsurface Geophysical Mapping Credits: 4 (3-2-0)
Course Description: Advanced techniques for creating subsurface geological maps based on seismic reflection and well log data.
Prerequisite: GEOL 344 and GEOL 372 and MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
GEOL 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

GEOL 747 Advanced Sedimentary Petrology Credits: 4 (3-3-0)
Course Description: Classification, origin, depositional history, and
diagenesis of detrital sedimentary rocks as determined from thin
sections.
Prerequisite: GEOL 344.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

GEOL 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Global Environment Sustain-GES (GES)

Courses

GES 101 Foundations of Environmental Sustainability Credits: 3 (3-0-0)
Course Description: Concepts, foundations, and metrics of global
environmental sustainability applied to global challenges.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 130 Introduction to Sustainability Engagement Credit: 1 (1-0-0)
Course Description: Introduction to sustainability engagement via
experiential learning.
Prerequisite: None.
Registration Information: Written consent of instructor. Enrolled in Eco-
leaders Peer Education Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 141 Introduction to Sustainable Energy Credits: 3 (3-0-0)
Course Description: Fossil, nuclear, and renewable energy sources.
Energy conversion, distribution, and storage. Energy and the environment.
Energy economics and policy.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GES 192 Global Environmental Sustainability Seminar Credits: 3 (0-0-0)
Course Description: Critical interconnections of global environmental
sustainability, the environment, economics, and society.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 441 Analysis of Sustainable Energy Solutions Credits: 3 (3-0-0)
Course Description: Methods of evaluating sustainable energy
technologies, including life cycle assessment, energy return on
investment, technoeconomic analysis, and political ecology.
Prerequisite: GES 141.
Registration Information: Sophomore standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
GES 450 Global Sustainability and Health  Credits: 3 (3-0-0)
Course Description: Impact of anthropogenic environmental change on human, animal and environmental health.
Prerequisite: GES 101.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 470 Applications of Environmental Sustainability Credits: 3 (3-0-0)
Course Description: Integration of the dimensions of global environmental sustainability—environment, society, and economy—through case studies and team project.
Prerequisite: GES 101.
Registration Information: Must have completed 12 credits of GES interdisciplinary minor; junior or senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GES 520 Issues in Global Environmental Sustainability Credits: 3 (3-0-0)
Course Description: Analysis of the different major dimensions/definitions of sustainability in current issues involving environmental, social and economic systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Graduate School-GRAD (GRAD)

Courses
GRAD 510 Fundamentals of High Performance Computing Credits: 3 (2-2-0)
Course Description: UNIX; networks; scalar, vector, and parallel architectures; performance programming.
Prerequisite: None.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

GRAD 511 High Performance Computing and Visualization Credits: 3 (2-2-0)
Course Description: Iterative methods for linear systems; Monte Carlo methods; visualization and image processing.
Prerequisite: GRAD 510.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

GRAD 544 Ethical Conduct of Research Credit: 1 (1-0-0)
Course Description: Principles and practice of ethical conduct of research.
Prerequisite: None.
Registration Information: Graduate standing. This is a partial semester course.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

GRAD 550 STEM Communication Credit: 1 (1-0-0)
Course Description: Review and practice of key communication principles for Science, Technology, Engineering, and Mathematics (STEM) professionals.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

Health + Exercise Science-HES (HES)

Courses
HES 100A Beginning Physical Education: Aerobic Exercise Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
HES 100C  Beginning Physical Education: Soccer  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100D  Beginning Physical Education: Self-Defense  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100E  Beginning Physical Education: Tennis  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100F  Physical Education Activities: Conditioning and Fitness  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100G  Physical Education Activities: Swimming  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100H  Physical Education Activities: Advanced Swimming  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100I  Physical Education Activities: Special Activities  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100J  Beginning Physical Education: Volleyball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100K  Beginning Physical Education: Swimming  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100L  Beginning Physical Education: Golf  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 100M  Beginning Physical Education: Basketball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100N  Beginning Physical Education: Racquetball  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100O  beginning Physical Education: Weight Training  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 100P  Beginning Physical Education: Ice Skating  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 102A  Physical Education Activities: Aquatic Conditioning  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Registration Information: Intermediate swimming ability.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102B  Physical Education Activities: Conditioning and Fitness  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HES 102C  Physical Education Activities: Special Activities  Credit: 1 (0-3-0)
Course Description: Physical activities for the development of personal motor skills.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HES 120 Introduction to Health and Exercise Science  Credit: 1 (1-0-0)
Course Description: Health and Exercise Science major, career options, campus resources, tools for academic success, various health-related topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 145 Health and Wellness  Credits: 3 (3-0-0)
Course Description: Personal health behaviors and personal choice in response to wellness.
Prerequisite: None.
Registration Information: Credit not allowed for both HES 145 and HES 143. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 207 Anatomical Kinesiology  Credits: 3 (2-2-0)
Course Description: Anatomical, physiological, and mechanical fundamentals of human movement.
Prerequisite: MATH 125, may be taken concurrently.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232 Techniques of Teaching Group Exercise  Credit: 1 (0-2-0)
Course Description: Learn practical skills for the instruction of various group fitness activities. Emphasis is on physiological principles related to group fitness, as well as choreography, safety, and modifications for diverse populations and current trends.
Prerequisite: HES 207.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 232A Techniques of Teaching Physical Activity: Weight Training  Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching individual sports with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 240 First Aid and Emergency Care  Credits: 2 (1-2-0)
Course Description: Principles, applied techniques emphasizing emergency rescue and care. Meets requirements for Red Cross Advanced First Aid and Emergency Care Credential.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 303 Biomechanics and Neurophysiology  Credits: 3 (3-0-0)
Course Description: Study and elementary analysis of human motion based on anatomical, neurophysiological, and mechanical principles.
Prerequisite: HES 207.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 307 Biomechanical Principles of Human Movement  Credits: 4 (3-2-0)
Course Description: Study and elementary analysis of human motion based on anatomical and mechanical principles.
Prerequisite: (HES 207 or BMS 301) and (PH 121 or PH 141).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 309 Methods of Coaching  Credits: 2 (2-0-0)
Course Description: Preparation to coach in an interscholastic athletic situation.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 319 Neuromuscular Aspects of Human Movement  Credits: 4 (3-2-0)
Course Description: Neuromuscular anatomy and physiology of human movement. Applied/integrated topics: aging, muscle fatigue, training, force control, and neuromuscular disease.
Prerequisite: BMS 300 and HES 207.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 332F Techniques of Teaching Individual Sports: Weight Training  Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching weight training with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Corresponding laboratory or competency in area.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 332H Techniques of Teaching Individual Sports: Aerobics  Credit: 1 (0-2-0)
Course Description: Practical and theoretical aspects of teaching aerobics with special emphasis on materials, teaching techniques, and analyzing skills.
Prerequisite: None.
Registration Information: Corresponding laboratory or competency in area.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HES 340 Exercise Prescription Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise prescription for healthy individuals, cardiac patients, and other special populations according to the American College of Sports Medicine (ACSM) guidelines. Includes the practice of proper lifting and spotting techniques, manipulation of training variables, and design of safe, effective, and efficient individual workout programs.
Prerequisite: BMS 300 with a minimum grade of C and FSHN 150 with a minimum grade of C and HES 207 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 345 Population Health and Disease Prevention Credits: 3 (3-0-0)
Course Description: Causes of disease throughout the lifespan and interventions designed to prevent disease.
Prerequisite: HES 145.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 354 Theory of Health Behavior Credits: 3 (3-0-0)
Course Description: Health behavior (HB) theories and their application to health promotion (HP) programs. Multi-level factors that interactively impact human HBs, theoretical foundations for these factors, and the relationship between HBs & selected health outcomes. Discuss application of HB theories, and examine HP programs that have applied these theories in different settings and high risk populations.
Prerequisite: HES 145 or PSY 100.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 355 Integration of Health Behaviors Credits: 3 (3-0-0)
Course Description: Designed to guide students in applying their knowledge of health behavior change to individuals with various health challenges. Explores a variety of health topics including understanding stress and coping and managing stress, behavioral factors in chronic disease, and behavioral health.
Prerequisite: HES 340 and HES 354.
Registration Information: Completion of 60 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 379 Psychology and Sport Credits: 3 (3-0-0)
Course Description: Psychological and social implications involved in teaching physical education and coaching athletics.
Prerequisite: PSY 100 and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and BMS 300 with a minimum grade of C.
Registration Information: Must have taken the following courses and maintained a minimum GPA of 2.500 in them: HES 145; HES 207; BMS 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 386 Practicum—Adult Fitness Credits: 2 (1-2-0)
Course Description: Adult fitness.
Prerequisite: HES 232 and HES 340 with a minimum grade of C.
Registration Information: Must have earned a cumulative 2.750 GPA in: BMS 300, FSHN 150, HES 145, and HES 207. Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 403 Physiology of Exercise Credits: 4 (3-2-0)
Course Description: Effects of exercise on tissues, organs, and systems of the body.
Prerequisite: (BMS 300 or BMS 360) and (LIFE 102).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 405 Exercise Testing Instrumentation Credits: 2 (1-2-0)
Course Description: Theory and operation of devices commonly employed in quantifying factors related to exercise.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 410 Bioethics: Concepts and Controversies Credits: 3 (2-0-1)
Course Description: Origins of bioethics and analysis of cases/controversies in contemporary bioethics.
Prerequisite: PHIL 205.
Registration Information: PHIL 205 or 7 credits of AUCC-science category 3A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 420 Electrocardiography and Exercise Management Credits: 3 (2-2-0)
Course Description: Interpretation of 12-lead ECG tracings, administering exercise tests, and prescribing exercise program for healthy individuals and special populations.
Prerequisite: BMS 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HES 434 Physical Activity Throughout the Lifespan Credits: 3 (3-0-0)
Course Description: Impact of physical activity on biology and physiology of human development and aging processes.
Prerequisite: BMS 300.
Registration Information: Credit not allowed for both HES 434 and HES 444.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HES 444 Successful Aging: Role of Physical Activity Credits: 2 (2-0-0)
Course Description: Biology and physiology of healthy aging and impact of disease and physical activity on aging processes.
Prerequisite: LIFE 102 or BZ 110.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 455 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Investigation of established health promotion programs with special emphasis on design, implementation, and evaluation of programming models.
Prerequisite: HES 355 and HES 386A and HES 403.
Registration Information: Senior standing. Credit not allowed for both HES 455 and HES 456.
Terms Offered: Fall, Spring (every third year).
Grade Mode: Traditional.
Special Course Fee: No.

HES 476 Exercise and Chronic Disease Credits: 3 (3-0-0)
Course Description: Interaction of physical activity with pathophysiology and treatment of chronic diseases and conditions.
Prerequisite: BC 351 and FSHN 350 and HES 403.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486A Practicum: Adaptive Correctives Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486B Practicum: Wellness Program Management Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: HES 386B and BMS 300 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and FSHN 150 with a minimum grade of C.
Registration Information: 2.5 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 486C Practicum: Coaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 487 Internship Credits: 15 (0-0-40)
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisite: HES 486B and BMS 300 with a minimum grade of C and HES 145 with a minimum grade of C and HES 207 with a minimum grade of C and FSHN 150 with a minimum grade of C.
Registration Information: 2.5 GPA.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 492 Health and Exercise Science Seminar Credits: 3 (0-0-3)
Course Description: Integration and reflection on health and exercise science disciplinary knowledge.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 495A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495B Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495C Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 495E Independent Study: Honors Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
HES 496B Group Study: Athletics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496C Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496D Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 496E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 520 Advanced Exercise Testing and Prescription Credits: 3 (2-2-0)
Course Description: Theory and practice of exercise testing and prescription in apparently healthy and diseased populations.
Prerequisite: HES 403.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 530 Clinical Biomechanics Credits: 3 (3-0-0)
Course Description: Effect of external loads on internal tissues; concern for injury, injury prevention, and rehabilitation.
Prerequisite: BMS 301 and HES 307.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 531 Muscle and Joint Mechanics Credits: 3 (3-0-0)
Course Description: Integrate muscle, tendon, and location of bone attachment into a comprehensive understanding of human movement at the single- and multi-joint level.
Prerequisite: BMS 301 and HES 307.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 545 Evolutionary Basis for Health and Fitness Credits: 3 (3-0-0)
Course Description: Evolutionary basis for human health and fitness based upon dietary and exercise patterns for pre-agricultural humans.
Prerequisite: HES 403 and FSHN 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 556 Wellness and Health Promotion Concepts Credits: 3 (3-0-0)
Course Description: Discussion of theory and application of health promotion in various settings.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 600 Research Design in Health/Exercise Science Credits: 3 (3-0-0)
Course Description: The research process including design, implementation, proposal synthesis and statistical considerations applied to health and exercise science.
Prerequisite: STAT 100 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 602 Advanced Physiology of Exercise Credits: 3 (3-0-0)
Course Description: Integrative exercise physiology covering metabolism, cardiovascular physiology, pulmonary physiology, and neuromuscular physiology in humans.
Prerequisite: HES 403.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 603 Advanced Topics in Exercise Physiology Credits: 3 (3-0-0)
Course Description: Advanced principles of theoretical and applied exercise physiology at molecular, cellular, and systemic levels.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 610 Exercise Bioenergetics Credits: 3 (3-0-0)
Course Description: Biology of energy transfer reactions related to human locomotion and exercise performance in both healthy individuals and disease states.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 619 Advanced Neural Control of Movement Credits: 3 (3-0-0)
Course Description: Neuroanatomical, neurophysiological, and applied topics on the control of force and human movement.
Prerequisite: BMS 300 and BMS 301 and HES 403.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
HES 630 Integrative Exercise and Nutrition Metabolism Credits: 3 (3-0-0)
Also Offered As: FSHN 630.
Course Description: Advances in integrative human metabolism under conditions of changing energy flux.
Prerequisite: FSHN 551 and HES 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both FSHN 630 and HES 630.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 645 Epidemiology of Health and Physical Activity Credits: 3 (3-0-0)
Course Description: Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.
Prerequisite: HES 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 650 Health Promotion Programming Credits: 3 (3-0-0)
Course Description: Development of skills in health promotion program design, implementation and evaluation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 656 Comprehensive Stress Management Credits: 3 (3-0-0)
Course Description: Relationship between stress and illness emphasizing methods to impact its detrimental effects.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HES 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Practical application of knowledge and skills in a professional situation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686B Practicum: Wellness Management Credits: Var[1-3] (0-0-0)
Course Description: Consideration of graduate education in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 686C Practicum: Youth Fitness and Skill Development Credits: Var[1-3] (0-0-0)
Course Description: Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option, Traditional.
Special Course Fee: No.

HES 686D Practicum: Health and Exercise Science Research Credits: Var[1-3] (0-0-0)
Course Description: Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Current CPR certification.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option, Traditional.
Special Course Fee: No.
HES 693 Seminar Credit: 1 (0-0-1)
Course Description: Current topics and issues in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 2 credits allowed in course.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HES 695A Independent Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Undergraduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695B Independent Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695C Independent Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Undergraduate.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 695D Independent Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696A Group Study: Health Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696B Group Study: Exercise and Nutrition Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696C Group Study: Exercise Science Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696D Group Study: Biomechanics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 696E Group Study: Neuromuscular Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 698 Research Credits: Var[1-18] (0-0-0)
Course Description: Non-thesis research in health and exercise science.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 700 Professional Skills in Bioenergetics Credits: 3 (2-0-1)
Course Description: Grant writing, authorship, peer review process, responsible conduct of science, research ethics, professional conduct, career opportunities.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to doctoral program, or admission to M.S. program and written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 704A Advanced Topics in Bioenergetics: Movement Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HES 704B Advanced Topics in Bioenergetics: Physiology Credits: 3 (3-0-0)
Course Description: Advanced topics in physiology, biochemistry, biomechanics, and neural control exploring pathogenesis and treatment of chronic disease.
Prerequisite: None.
Restriction: .
Registration Information: Graduate standing. Maximum of 6 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HES 710 Exercise in Disease Prevention Credits: 3 (3-0-0)
Course Description: Role of exercise/physical activity in the prevention, pathophysiology and treatment of chronic diseases.
Prerequisite: HES 403 and HES 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 730 Cardiovascular Pathophysiology Credits: 3 (3-0-0)
Course Description: Cardiovascular physiology with emphasis on the development, progression, and treatment of diseases of the cardiovascular system.
Prerequisite: HES 403 and HES 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 735 Human Cardiovascular Control Credits: 3 (2-0-1)
Course Description: Dynamics of cardiovascular control in human health and disease.
Prerequisite: HES 403.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HES 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 786 Practicum Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 793 Bioenergetics Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HES 795 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 796 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 798 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HES 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

History-HIST (HIST)

Courses

HIST 100 Western Civilization, Pre-Modern (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical development of Western civilization from antiquity to the early modern era (c. 1600 C.E.)
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 101 Western Civilization, Modern (GT-HI1) Credits: 3 (3-0-0)
Course Description: Historical development of Western civilization from c. 1600 C.E. to the contemporary era.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 115 The Islamic World: Late Antiquity to 1500 Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world from late antiquity to the Ottoman conquest of Constantinople and the Reconquista in Spain.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.
HIST 116  The Islamic World Since 1500  Credits: 3 (3-0-0)
Course Description: Religion, society, and culture in the Islamic world since 1500.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D.

HIST 120  Asian Civilizations I (GT-HI1)  Credits: 3 (3-0-0)
Course Description: Major traditional intellectual and cultural patterns of Asia during the formative years.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 150  U.S. History to 1876 (GT-HI1)  Credits: 3 (3-0-0)
Course Description: Major issues and themes in the historical development of the United States from the colonial period through Reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 151  U.S. History Since 1876 (GT-HI1)  Credits: 3 (3-0-0)
Course Description: Major issues and themes in the historical development of the United States since Reconstruction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 170  World History, Ancient-1500 (GT-HI1)  Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from the ancient to modern periods.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 171  World History, 1500-Present (GT-HI1)  Credits: 3 (3-0-0)
Course Description: Historical developments and interactions of world societies from 1500 to the present.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 250  African American History (GT-HI1)  Credits: 3 (3-0-0)
Also Offered As: ETST 250.
Course Description: Slavery, emancipation, labor, political, socioeconomic, and cultural history of African Americans since colonial times.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 250 and ETST 250.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 252  Asian American History (GT-HI1)  Credits: 3 (3-0-0)
Also Offered As: ETST 252.
Course Description: Asian American historical experience in the United States from 1850s to the present time.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 252 and ETST 252.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 255  Native American History (GT-HI1)  Credits: 3 (3-0-0)
Also Offered As: ETST 255.
Course Description: History of Native American peoples in the United States to the present, including origin stories.
Prerequisite: None.
Registration Information: Credit not allowed for both HIST 255 and ETST 255.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Historical Perspectives 3D, History (GT-HI1).

HIST 300  Ancient Greece to 323 B.C.E.  Credits: 3 (3-0-0)
Course Description: From the Bronze Age to the death of Alexander the Great, emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 301  Roman Republic  Credits: 3 (3-0-0)
Course Description: Roman history from the monarchy to the fall of the republic; special emphasis on political, cultural, and social history.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 302  Roman Empire  Credits: 3 (3-0-0)
Course Description: Roman history from the principate of Augustus to the reign of Constantine; special emphasis on political, intellectual, cultural, and social history.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 303 Hellenistic World: Alexander to Cleopatra Credits: 3 (3-0-0)
Course Description: From Alexander the Great to Cleopatra VII, emphasizing intellectual, social, military, political, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 304 Women in Medieval Europe Credits: 3 (3-0-0)
Course Description: Comparative study of roles of women and gender in Ancient Greece and Rome.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 308 Ancient Christianity to 500 A.D. Credits: 3 (3-0-0)
Course Description: Growth of Christian Church from 1st to 5th century; emphasis on its role in Roman Empire; development of ecclesiastical institutions and literature.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 309 Medieval Christianity, 500-1500 Credits: 3 (3-0-0)
Course Description: Christian Church in Eastern and Western Christendom emphasizing its role in medieval society, relationship with the state, and its institutions.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 310 Medieval Europe Credits: 3 (3-0-0)
Course Description: Political, legal, socioeconomic development of Europe from 300-1500 emphasizing emergence of major states.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 311 Medieval England Credits: 3 (3-0-0)
Course Description: Political, social, and intellectual development of England from Romans to end of Middle Ages.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 312 Women in Medieval Europe Credits: 3 (3-0-0)
Course Description: Women in the European Middle Ages; political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 315 Tudor Stuart England, 1485-1689 Credits: 3 (3-0-0)
Course Description: Political, economic, and social history of England from 1485-1689 emphasizing religious movements, revolution, and constitutional development.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 317 Renaissance and Reformation Europe Credits: 3 (3-0-0)
Course Description: Development of European society during Renaissance and Reformation eras; religion, society, and the rise of nation-states.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 318 The Age of the Enlightenment Credits: 3 (3-0-0)
Course Description: Development of European society from settlement of religious wars to French Revolution emphasizing political, economic, and intellectual trends.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 319 Early Modern France, 1500-1789 Credits: 3 (3-0-0)
Course Description: Political, social, economic, religious, and cultural developments in France (16th-18th centuries) emphasizing formation of the absolutist state.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 320 Women and Gender in Europe, 1450-1789 Credits: 3 (3-0-0)
Course Description: Women and gender in western Europe (15th-18th centuries); political, social, economic, religious, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 321 Industrial Society in Europe, 1600-1871 Credits: 3 (3-0-0)
Course Description: Causes and consequences of European industrialization and its impact on European Societies between 1600 and 1871.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
<th>Registration Information</th>
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</thead>
<tbody>
<tr>
<td>HIST 322</td>
<td>Industrial Society in Europe, 1871-1989</td>
<td>3</td>
<td>Causes and consequences of industrialization and its impact on European societies</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<td>HIST 323</td>
<td>Russia Before 1700</td>
<td>3</td>
<td>Russia's political predecessors; contacts with Byzantium, Western Europe, and the</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall (even years)</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<td>HIST 324</td>
<td>Imperial Russia</td>
<td>3</td>
<td>Tsarist Russia from its beginnings to the November 1917 Revolution; emphasis on</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<td>HIST 325</td>
<td>Ireland: Culture, Politics, Society and Nation</td>
<td>3</td>
<td>Creation of modern Ireland from the 18th century to the present, with brief opening</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<td>HIST 326</td>
<td>Modern Europe, 1815-1914</td>
<td>3</td>
<td>Europe in 19th century emphasizing growth of liberalism, nationalism, and</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<td>HIST 327</td>
<td>Europe in Crisis, 1914-1941</td>
<td>3</td>
<td>Political, social, economic developments since 1914; consequences of world wars,</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<tr>
<td>HIST 328</td>
<td>Eastern Europe Since 1918</td>
<td>3</td>
<td>Breakup of Austrian, German, Russian, Turkish Empires; successor states between wars</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<tr>
<td>HIST 329</td>
<td>France Since World War I</td>
<td>3</td>
<td>German history, culture, and everyday life from 1914 to present.</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<tr>
<td>HIST 330</td>
<td>Contemporary Europe</td>
<td>3</td>
<td>Political, economic, social, and cultural history of major European nations since</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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<tr>
<td>HIST 331</td>
<td>Europe in the 20th Century</td>
<td>3</td>
<td>Cultural developments since World War I emphasizing science, art, clash of ideologies,</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Spring</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
</tr>
<tr>
<td>HIST 332</td>
<td>Britain in the 20th Century</td>
<td>3</td>
<td>Political, economic, and social developments emphasizing role of Britain in world</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
</tr>
<tr>
<td>HIST 333</td>
<td>Germany from Napoleon to WWI</td>
<td>3</td>
<td>Modern Germany from the late eighteenth to the early twentieth centuries.</td>
<td>HIST 100 to 499 - at least 3 credits.</td>
<td>Fall (even years)</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No</td>
<td>Completion of 45 credits.</td>
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</table>

**Notes:**
- **Grade Modes:** S/U within Student Option, Trad within Student Option.
- **Terms Offered:** Fall, Spring, Summer.
- **Special Course Fee:** No.
- **Completion of 45 credits.**
HIST 338 The Holocaust in Historical Perspective  Credits: 3 (3-0-0)  
Course Description: Comprehensive introduction to the Holocaust as a defining event of modern Jewish, European and world history. Strong emphasis on historical context, including the evolution of modern antisemitism and the rise of fascism. While the course will focus on Hitler's singular war against European Jewry, it also examines Nazi campaigns against other targeted populations, including the disabled, Roma/Sinti, homosexuals, communists, Jehovah's Witnesses, and others.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

HIST 339 World War II in Europe  Credits: 3 (3-0-0)  
Course Description: WWII in Europe (1939-1945): military strategy, tactics; political and diplomatic events; economic and social impacts; ethnic and gender consequences.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Fall, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

HIST 340 Colonial North America, 1492-1800  Credits: 3 (3-0-0)  
Course Description: New World encounters between Native Americans, Europeans, and Africans, and the colonial societies they built.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Fall, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 341 Eighteenth Century America  Credits: 3 (3-0-0)  
Course Description: Politics, culture, and society in Colonial British America and the new United States, 1700-1815.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 343 Early U.S. Republic  Credits: 3 (3-0-0)  
Course Description: Major themes of U.S. cultural, economic, social, and political history, 1787-1815.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Fall, Summer (odd years).  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 344 Antebellum America  Credits: 3 (3-0-0)  
Course Description: National growth, 1800 to 1860, emphasizing political, social, and economic developments.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 345 Civil War Era  Credits: 3 (3-0-0)  
Course Description: U.S. history between 1848 and 1865 emphasizing causes and results of the Civil War.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits. Sections may be offered: Online.  
Term Offered: Fall, Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 346 Reconstruction and the New South Credits: 3 (3-0-0)  
Course Description: Reconstruction Era, 1865-1877, and the South to present with emphasis on purposes and results of Reconstruction.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 347 United States, 1876-1917  Credits: 3 (3-0-0)  
Course Description: Victorian way of life; rise of industry; reform movements; imperialism; World War I.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Spring (even years).  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 348 United States, 1917-1945  Credits: 3 (3-0-0)  
Course Description: World War I, the 1920s, the Great Depression, and World War II.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Fall, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 349 United States Since 1945  Credits: 3 (3-0-0)  
Course Description: The Cold War, foreign and domestic affairs from Truman to present.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Spring, Summer.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 350 United States Foreign Relations Since 1914  Credits: 3 (3-0-0)  
Course Description: Main problems in U.S. foreign relations in the 20th century; especially causes and consequences of the two world wars, Great Depression and the Cold War.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

HIST 351 American West to 1900  Credits: 3 (3-0-0)  
Course Description: Social, political, economic, environmental developments and intercultural relations in trans-Mississippi West to 1900.  
Prerequisite: HIST 100 to 499 - at least 3 credits.  
Registration Information: Completion of 45 credits.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.
HIST 352 American West Since 1900 Credits: 3 (3-0-0)
Course Description: Social, political, economic, environmental developments and intercultural relationships in trans-Mississippi West since 1900.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 353 U.S.-Mexico Borderlands Credits: 3 (3-0-0)
Course Description: Borderlands, northern Mexico, southwestern U.S.; intercultural relationships among Indian, Spanish, Mexican, U.S. cultures.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 354 American Architectural History Credits: 3 (3-0-0)
Course Description: Broad historical interpretation of the North American built environment from 1500 to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 355 American Environmental History Credits: 3 (3-0-0)
Course Description: Interaction of humans and nature in American history with emphasis on relationships between environmental, social, and cultural change.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 356 American Cultural and Intellectual History Credits: 3 (3-0-0)
Course Description: Role of American cultural and intellectual developments in American society and the world.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 357 The American Military Experience Credits: 3 (3-0-0)
Also Offered As: MLSC 357.
Course Description: Role of the armed forces in American society; development of military traditions, institutions, and practices.
Prerequisite: HIST 100 or HIST 101 or HIST 115 or HIST 120 or HIST 121 and HIST 150 or HIST 151 or HIST 170 or HIST 171.
Registration Information: Completion of 45 credits. Credit not allowed for both MLSC 357 and HIST 357.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

HIST 358 American Women's History to 1800 Credits: 3 (3-0-0)
Course Description: History of Indian, African, and European women in North America from early colonial contact through the American Revolution and into Early Republic.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 359 American Women's History Since 1800 Credits: 3 (3-0-0)
Course Description: Social, cultural, economic, and political history of women in the United States since 1800.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 360 United States Immigration History Credits: 3 (3-0-0)
Course Description: Central themes of U.S. immigration from perspective of major immigrant groups and within context of U.S. immigration policy.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 361 American Indians in the Age of Conquest Credits: 3 (3-0-0)
Course Description: American Indian history from pre-contact to the era of Indian removal (1840s) focused on the impact of colonization.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 362 American Indian Renaissance in Modern America Credits: 3 (3-0-0)
Course Description: American Indian history from the reservation era to the present with a focus on cultural and political renewal.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 363 Colorado History Credits: 3 (3-0-0)
Course Description: History of Colorado from pre-history to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
HIST 364  Asian American Social Movements, 1945-Present  Credits: 3 (3-0-0)
Also Offered As: ETST 364.
Course Description: Historical relationships between Asian Americans and social movements for social, economic, and political equity in the U.S. since 1945.
Prerequisite: HIST 151 or HIST 252 or ETST 252.
Registration Information: Completion of 45 credits. Credit not allowed for both HIST 364 and ETST 364.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 365  American West Field Study  Credits: 3 (2-3-0)
Course Description: Explore western U.S. history through primary sources and field trips to sites in Colorado and the West. Topic varies by semester and instructor.
Prerequisite: None.
Registration Information: Students may take course only once for credit toward degree completion. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HIST 366  African-American History to 1865  Credits: 3 (3-0-0)
Course Description: African-American history from the colonial era to the end of the Civil War.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 367  African-American History Since 1865  Credits: 3 (3-0-0)
Course Description: African-American history from the end of the Civil War to the late twentieth century.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 368  The American South  Credits: 3 (3-0-0)
Course Description: The American South, 1607 to the present; plantation system, slave culture, secession, Civil War, Reconstruction, Jim Crow, Civil Rights, and the modern South.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 369  History of Sexuality in America  Credits: 3 (3-0-0)
Course Description: History of sexuality in North America and the United States from the pre-colonial period to the present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 379  Economic History of the United States  Credits: 3 (3-0-0)
Also Offered As: ECON 379.
Course Description: Economic analysis of growth and welfare from beginning of industrialization to present.
Prerequisite: ECON 101 or ECON 202 or AREC 202.
Registration Information: Any 2 courses in American history; Completion of 45 credits. Credit not allowed for both HIST 379 and ECON 379.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 382A  Study Abroad: WWII in Europe - The Normandy Campaign  Credits: Var[1-3] (0-0-0)
Course Description: Study abroad experience focused on understanding WWII in Europe, specifically the Normandy Campaign and its implications for the western front.
Prerequisite: HIST 100 to 9999 - at least 3 credits.
Registration Information: Written consent of instructor. Since this is a travel course, students will apply through the Education Abroad office.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 410  Colonial Latin America  Credits: 3 (3-0-0)
Course Description: Spanish and Portuguese America from pre-Columbian times through independence (c. 1825).
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 411  Latin America Since Independence  Credits: 3 (3-0-0)
Course Description: Major trends in the social, cultural, political, and economic evolution of Spanish America and Brazil since independence.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 412  Mexico  Credits: 3 (3-0-0)
Course Description: Social, economic, and political development of Mexican people from pre-Columbian times to present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 414  Revolutions in Latin America  Credits: 3 (3-0-0)
Course Description: Historical and theoretical issues arising from revolutionary episodes in Latin America, with emphasis on 20th century case studies.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 420 Africa: Precolonial States and Empires  Credits: 3 (3-0-0)
Course Description: Origins of societal and political development in Africa before 1800; technology, the environment, human migrations, and trade.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 421 Africa: Colonialism to Independence  Credits: 3 (3-0-0)
Course Description: Africa from abolition of the slave trade to independence, focusing on economic, social, and political change under colonialism.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 422 Modern Africa  Credits: 3 (3-0-0)
Course Description: Colonial roots of modern Africa focusing on the period since 1935. Case studies of social and political change in Africa since World War II.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 423 South African History  Credits: 3 (3-0-0)
Course Description: South African history from human origins to the end of Apartheid.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 424 East African History  Credits: 3 (3-0-0)
Course Description: Overview of East African history from human origins to modern times, focusing on Kenya, Tanzania, and Uganda.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 430 Ancient Near East  Credits: 3 (3-0-0)
Course Description: Neolithic period to 500 B.C.E. emphasizing political, social, intellectual, and cultural developments.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 431 Ancient Israel  Credits: 3 (3-0-0)
Course Description: Ancient Israel and the Near Eastern world of the Hebrew Bible/Old Testament.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 432 Sacred History in the Bible and the Qur'an  Credits: 3 (3-0-0)
Course Description: Conceptions of sacred history in the Biblical and Qur'anic traditions, emphasizing pre-modern historiography and exegesis.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 433 Muhammad and the Origins of Islam  Credits: 3 (3-0-0)
Course Description: Emergence of Islam and growth of the Islamic community from time of Muhammad to decline of the Arab Caliphate.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 435 Jihad and Reform in Islamic History  Credits: 3 (3-0-0)
Course Description: Jihad and reform in classical and modern Islamic thought and practice.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 436A Study Abroad--Pre & Post Travel: The Land of Israel--Past and Present  Credit: 3 (2-0-1)
Course Description: Physical geography, material culture, history of Israel: ancient, medieval, and modern.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 436B Study Abroad: The Land of Israel--Past and Present  Credit: 1 (0-0-1)
Course Description: Physical geography, material culture, history of Israel: ancient, medieval, and modern.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 438 The Modern Middle East  Credits: 3 (3-0-0)
Course Description: Historical developments in the Middle East in the 19th and 20th centuries.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 440 Modern South Asia: Colonialism and Nationalism Credits: 3 (3-0-0)
Course Description: Completion of 45 credits. Sections may be offered: Online.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 441 South Asia Since Independence Credits: 3 (3-0-0)
Course Description: Major political, social, economic, and cultural developments in South Asia after independence.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 450 Ancient China Credits: 3 (3-0-0)
Course Description: Development of civilizations in China from Neolithic times to 200 B.C.E.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 451 Medieval China and Central Asia Credits: 3 (3-0-0)
Course Description: Historical developments in China and Central Asia from 200 B.C.E. to 1300 C.E.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 452 China in the Modern World, 1600-Present Credits: 3 (3-0-0)
Course Description: Historical developments in China since 1600.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 455 Tokugawa and Modern Japan, 1600-Present Credits: 3 (3-0-0)
Course Description: Historical developments in Japan since 1600.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 456 East Asia in the Age of Empire, 1800-Present Credits: 3 (3-0-0)
Course Description: Rise of modern imperialism in East Asia, both from without (the "West") and from within (Japan), 1800-present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 457 Asia in the Modern World Credits: 3 (3-0-0)
Course Description: Historical developments in Asia since 1800.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Terms Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 460 Slavery in the Americas Credits: 3 (3-0-0)
Course Description: Slave labor; Atlantic world economy; African contributions to American culture; gender and racial dynamics; emancipation movements.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 461 Rise and Fall of British Empire 1600-1947 Credits: 3 (3-0-0)
Course Description: Beginnings of globalization; its origins in the spread of the British Empire; major causes of expansion, forms of control, long-term effects.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 462 Science and Technology in Modern History Credits: 3 (3-0-0)
Course Description: Impact of science and technology on industry, agriculture, medicine, education, etc. Issues in science and technology policy.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 463 Pacific Wars: Philippines-WWII Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the Philippines war through WWII.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 464 Pacific Wars: Korea and Vietnam Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the war in Korea through the war in Vietnam.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 465 Pacific Wars: Korea and Vietnam Credits: 3 (3-0-0)
Course Description: Diplomatic, ideological, political, cultural, and military aspects of war in the Pacific from the war in Korea through the war in Vietnam.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 466 U.S.-China Relations Since 1800 Credits: 3 (3-0-0)
Course Description: United States-China relations as represented in travel narratives, memoirs, journalistic and diplomatic writing, biography, and autobiography.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 467 Modern Jewish History Credits: 3 (3-0-0)
Course Description: Political, social, cultural, and economic dimensions of modern Jewish history from both a regional and global perspective.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 469 The Crusades Credits: 3 (3-0-0)
Course Description: The Crusades, emphasizing religion, politics, and warfare in Western Europe, Byzantium, the Near East, and the Mongol world empire, c. 1050-1300.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 470 World Environmental History, 1500-Present Credits: 3 (3-0-0)
Course Description: World environmental history since 1500, emphasizing the dynamic interaction of nature, culture, and human activity.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 471 History of Antarctica, 1800-Present Credits: 3 (3-0-0)
Course Description: History of Antarctica from discovery in the early nineteenth century to the present.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 475 History in the Digital Age Credits: 3 (3-0-0)
Course Description: Examine recent works of digital history and explore the critical issues and technologies used in digital history.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 476 History of America's National Parks Credits: 3 (3-0-0)
Course Description: The national park system and its development from concept to design to implementation.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 477 Teaching History Credits: 3 (3-0-0)
Course Description: Teaching history, emphasizing teaching historical literacy, research, and writing at the middle and high school levels.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 478 Heritage Resource Management Credits: 3 (3-0-0)
Also Offered As: ANTH 478.
Course Description: Cultural resource laws and policy; practices commonly employed in the management and preservation of these diverse resources.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior or senior standing. Credit not allowed for both HIST 478 and ANTH 478.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HIST 479 Practice of Public History Credits: 3 (3-0-0)
Course Description: Public history methods and career paths into interpretation, museums, archives, historic preservation, oral history, and other fields.
Prerequisite: HIST 100 to 499 - at least 3 credits.
Registration Information: Completion of 45 credits.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Assisting the instructor in teaching introductory history courses; relevant readings and discussions.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HIST 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Application of historical methods in museums, libraries, and at historic sites.
Prerequisite: None.
Registration Information: Completion of 45 credits. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 492 Capstone Seminar Credits: 3 (0-0-3)
Course Description: Seminar involving critical reading, writing, research, and discussion. Topics vary by instructor.
Prerequisite: None.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing; history majors only. To count toward the major, the course must be completed with a grade of C or better.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
HIST 497 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Completion of 45 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 501 Historical Method: Historiography Credits: 3 (0-0-3)
Course Description: Historiographical skills and methods, emphasis on research, writing, and interpretation.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HIST 520 Reading Seminar-Europe to 1815 Credits: 3 (0-0-3)
Course Description: Readings on European history to 1815.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 539 Reading Seminar--World Environmental History Credits: 3 (0-0-3)
Course Description: Major works in the field of world environmental history and the major historiographical debates.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
HIST 540 Material Culture Credits: 3 (0-0-3)
Course Description: Social, cultural, economic, and political developments in history as interpreted through artifacts.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 586 Practicum Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 587 Internship Credits: Var[1-6] (0-0-0)
Course Description: Work-oriented instruction involving implementation of classroom and laboratory experiences coordinated by a faculty member.
Prerequisite: HIST 501.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 611 Research Seminar: United States Credits: 3 (0-0-3)
Course Description: Research in United States history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 621 Research Seminar: Europe Credits: 3 (0-0-3)
Course Description: Research in European history.
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 640 Research Seminar: State and Local History Credits: 3 (0-0-3)
Course Description: Research in and interpretation of state and local history within the broader context of United States history.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Discussions and readings to enhance teaching proficiency.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HIST 697 Group Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HIST 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HIST 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Honors Program-HONR (HONR)

Courses
HONR 192 Honors First Year Seminar Credits: 4 (3-0-1)
Course Description: Humanistic and scientific studies; emphasis on literate activities, written communication; student development and transition to university life.
Prerequisite: None.
Registration Information: Participation in University Honors Program. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Traditional.
Special Course Fee: No.

HONR 193 Honors Seminar Credits: 3 (0-0-3)
Course Description: Humanistic and scientific studies with emphasis on rigorous literate activities, especially written communication.
Prerequisite: HONR 192.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HONR 195 Honors Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HONR 197 General Honors Colloquium Credits: Var[1-4] (0-0-0)
Course Description: Students from all major fields meet in small groups to focus on a problem of concern to all.
Prerequisite: None.
Registration Information: Freshmen and sophomore standing only. Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
HONR 292 Honors Seminar—Knowing in Arts and Humanities (GT-AH2) Credits: 3 (0-0-3)
Course Description: Knowledge systems and the human experience. Ways of knowing in the arts and humanities.
Prerequisite: HONR 192 and HONR 193.
Registration Information: Participation in University Honors Program. If Track 1, HONR 192; HONR 193. If Track 2, 30 or more college credits after graduation from high school. Credit not allowed for both HONR 292 and HONR 293.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

HONR 293 Honors Seminar—Knowing Across Cultures (GT-SS3) Credits: 3 (0-0-3)
Course Description: Identities, social contexts, global relations, and knowledge systems. Ways of knowing across cultures.
Prerequisite: HONR 192 and HONR 193.
Registration Information: Participation in University Honors Program. If Track 1, HONR 192; HONR 193. If Track 2, 30 or more college credits after graduation from high school. Credit not allowed for both HONR 293 and HONR 292.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HONR 384 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Participation in University Honors Program. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HONR 392 Honors Seminar Credits: 3 (0-0-3)
Course Description: Various topics in humanistic and scientific studies.
Prerequisite: HONR 193.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

HONR 397 General Honors Colloquium Credits: Var[1-4] (0-0-0)
Course Description: Students from all major fields meet in small groups to focus on a problem of concern to all.
Prerequisite: None.
Registration Information: Qualified junior and senior standing only. Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HONR 399 Pre-thesis Credit: 1 (0-0-1)
Course Description: Preparation for Honors senior thesis.
Prerequisite: None.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HONR 492 Honors Senior Seminar Credits: 3 (0-0-3)
Course Description: Variable topics on humanistic and scientific studies.
Prerequisite: HONR 392.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HONR 495 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: Individual projects developed by the student and the major adviser at the upper-division level but which transcends basic course content.
Prerequisite: None.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HONR 498 Honors Undergraduate Research Credits: Var[1-4] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Junior standing. Participation in University Honors Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HONR 499 Senior Honors Thesis Credits: 3 (0-0-3)
Course Description: Prerequisite: HONR 399.
Registration Information: Participation in University Honors Program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Horticulture-HORT (HORT)

Courses
HORT 100 Horticultural Science Credits: 4 (3-2-0)
Course Description: Principles of plant science and related disciplines as the base and context for the introduction of horticultural practices.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A.
HORT 171  Environmental Issues in Agriculture (GT-SS3)  Credits: 3 (2-0-1)
Also Offered As: SOCR 171.
Course Description: Historical development of agriculture, environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 171 and SOCR 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

HORT 221  Landscape Plants  Credits: 4 (2-4-0)
Course Description: Identification, landscape features, cultural requirements, and landscape use of coniferous and deciduous trees and shrubs, vines, and evergreens.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 231  Landscape Graphics Studio  Credits: 4 (2-4-0)
Course Description: Mechanical and freehand graphic techniques for landscape design. Use of pencil, ink, and colored markers. Plan, sectional, and perspective views.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 232  Principles of Landscape Design  Credits: 4 (2-4-0)
Course Description: Basic concepts in the art and process of landscape design.
Prerequisite: HORT 231.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 260  Plant Propagation  Credits: 4 (3-2-0)
Course Description: Theories, principles, and techniques of sexual and asexual propagation.
Prerequisite: BZ 120, may be taken concurrently or HORT 100, may be taken concurrently or LIFE 103, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 270  Fundamentals of Horticultural Therapy  Credits: 2 (2-0-0)
Course Description: Theory and practice of horticultural therapy in health care and human services; applications, settings, and professional career topics.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 277  Introduction to Enology  Credit: 1 (1-0-0)
Course Description: Methods/criteria to evaluate, compare, and describe aroma and flavor characteristics in sound commercial wines; identification of common wine defects.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 310  Greenhouse Management  Credits: 4 (3-2-0)
Course Description: Design and use of enclosed structures to manipulate controlled environments, effects on growth as applied to crops, production, and marketing costs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 321  Nursery Production and Management  Credits: 4 (3-2-0)
Course Description: Nursery industry organization, management, equipment, field and container production, storage, shipping, marketing, and business management practices.
Prerequisite: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 322  Herbaceous Plants  Credits: 3 (2-2-0)
Also Offered As: HORT 322B.
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
A) Face-to-face.
Prerequisite: HORT 100.
Registration Information: Credit not allowed for both HORT 322A and HORT 322B. Field trips required. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 322A  Herbaceous Plants  Credits: 3 (2-2-0)
Also Offered As: HORT 322B.
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
A) Face-to-face.
Prerequisite: HORT 100.
Registration Information: Credit not allowed for both HORT 322A and HORT 322B. Field trips required. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 322B  Herbaceous Plants  Credits: 3 (2-0-1)
Also Offered As: HORT 322A.
Course Description: Identification, landscape features, cultural requirements, and uses of ornamental annual, perennial, and bulb plants.
B) Online.
Prerequisite: HORT 100.
Registration Information: Credit not allowed for both HORT 322A and HORT 322B. Field trips required. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
HORT 330  Computers for Landscape Design  Credits: 2 (1-2-0)
Course Description: Applications and techniques of computer software utilized in small-scale landscape design-build.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 331  Landscape Design  Credits: 2 (2-0-0)
Course Description: Fundamentals of landscape design theory and plant composition as presented in simple problems.
Prerequisite: None.
Registration Information: For non-design majors only.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 335  Landscape Structures  Credits: 4 (2-4-0)
Course Description: Design and construction methods for structures commonly used in residential landscaping. Preparation of construction documents.
Prerequisite: CON 131 and HORT 232.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 336  Landscape Grading and Drainage Studio  Credits: 4 (2-4-0)
Course Description: Basic design principles for grading, drainage, and earth forms for small-scale projects.
Prerequisite: (HORT 221 and HORT 322 and HORT 335) and (MATH 118).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

HORT 341  Turfgrass Management  Credits: 3 (2-2-0)
Course Description: Principles and practices of turfgrass propagation and maintenance.
Prerequisite: HORT 100, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 344  Organic Greenhouse Production  Credit: 1 (1-0-0)
Course Description: Fundamentals of greenhouse production using organic production methods.
Prerequisite: HORT 310.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 345  Diagnosis and Treatment in Organic Fields  Credits: 2 (0-4-0)
Also Offered As: SOCR 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both HORT 345 and SOCR 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 367 Landscape Irrigation  Credits: 3 (2-2-0)
Course Description: Practical design of sprinkler and trickle irrigation systems for commercial and residential landscapes.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 367, HORT 368, LAND 368.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 368 Landscape Irrigation and Water Conservation  Credits: 3 (2-2-0)
Also Offered As: LAND 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: HORT 100 or LAND 110.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: HORT 367, HORT 368, LAND 368.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 370 Landscape Irrigation  Credit: 1 (1-0-0)
Course Description: Necessary skills to design and manage irrigation systems used in the landscape industry.
Prerequisite: HORT 100, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 377 Horticultural Methods for Therapy Programs  Credit: 1 (1-0-0)
Course Description: Horticultural methods for health care and human service settings, including indoor and outdoor growing techniques, management and plant selection.
Prerequisite: HORT 100 or HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 382 Origins of Agriculture in the Andes of Peru  Credits: 3 (0-0-3)
Course Description: Study abroad experience focused on understanding the agricultural, biological, cultural, and geographical diversity of the Andes region of Peru.
Prerequisite: HORT 100 or BZ 120 or LIFE 103.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HORT 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 401 Medicinal and Value-Added Uses of Plants Credits: 3 (3-0-0)
Course Description: Chemical, biochemical and ethnobotanical perspective on the medicinal and value-added uses of plants.
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 412 Floriculture Crops Credits: 4 (3-0-1)
Course Description: Commercial production and marketing of bedding plants, potted container crops, and cut flowers.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 421 Horticultural Therapy Techniques Credits: 2 (2-0-0)
Course Description: Clinical skills in horticultural therapy; communication, safety, leadership, therapeutic relationships, adaptation of tools and activities.
Prerequisite: HORT 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 423 Horticultural Therapy Programming Credits: 2 (2-0-0)
Course Description: Methods for individual treatment planning, intervention, documentation, and reporting within therapy, social, and vocational HT programs.
Prerequisite: HORT 421.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 424 Topics in Organic Agriculture Credits: 3 (3-0-0)
Also Offered As: SOCR 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (SOCR 240 and AREC 328) and (HORT 100 or SOCR 100) and (HORT 171 or SOCR 171).
Registration Information: Credit not allowed for both HORT 424 and SOCR 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 425 Horticultural Therapy Management Credits: 3 (2-0-1)
Course Description: Horticultural therapy program and site design, proposals, funding, marketing, management, and evaluation.
Prerequisite: HORT 423.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 431 Planting Design Studio Credits: 4 (2-4-0)
Course Description: Functional and aesthetic values of plant materials; their creative use in landscape design.
Prerequisite: HORT 221 and HORT 336 and HORT 322.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

HORT 432 Intensive Landscape Design Studio Credits: 5 (2-6-0)
Course Description: Site planning and design for landscape projects of a limited scale. Problems of increasing complexity. Emphasis on real sites and clients.
Prerequisite: HORT 487 and HORT 431.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 441 Turfgrass Science Credits: 3 (3-0-0)
Course Description: Examination of turfgrass management practices from a scientific perspective; discussion of advanced turfgrass management technologies.
Prerequisite: BZ 120 or HORT 100 or SOCR 240.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 450A Horticulture Food Crops: Cool Season Vegetable Production Credit: 1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Required field trips.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 450B Horticulture Food Crops: Warm Season Vegetable Production Credit: 1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 450C Horticulture Food Crops: Small Fruit Production Credit: 1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

HORT 450D Horticulture Food Crops: Tree Fruit Production Credit: 1 (1-0-0)
Course Description:
Prerequisite: BZ 120 or HORT 100 or LIFE 103.
Registration Information: Required field trips.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.
HORT 452  Viticulture-Grape Production  Credit: 1 (1-0-0)
Course Description:  Grape production in temperate zone climates.
Prerequisite:  BZ 120 or HORT 100 or LIFE 103 or SOCR 100.
Term Offered:  Fall (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 454  Horticulture Crop Production and Management  Credits: 2 (2-0-0)
Course Description:  Production and management of horticulture crops.
Prerequisite:  HORT 100.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 460  Plant Breeding  Credits: 3 (2-0-1)
Also Offered As:  SOCR 460.
Course Description:  Theory and practice of plant breeding using principles of genetics and related sciences.
Prerequisite:  BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.
Registration Information:  Must register for lecture and recitation. Credit not allowed for both HORT 460 and SOCR 460.
Term Offered:  Fall (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 461  Plant Breeding Laboratory  Credit: 1 (0-2-0)
Also Offered As:  SOCR 461.
Course Description:  Techniques and procedures used in public and commercial plant breeding programs.
Prerequisite:  HORT 460, may be taken concurrently or SOCR 460, may be taken concurrently.
Registration Information:  Credit not allowed for both HORT 461 and SOCR 461.
Term Offered:  Fall (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 462  Viticulture Practices in Grape Production  Credits: 3 (3-0-0)
Course Description:  Biology of grape vines and cultural practices including planning, training, pest control, pruning, and harvesting; special emphasis on Colorado.
Prerequisite:  None.
Term Offered:  Fall (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 464A  Arboriculture  Credits: 3 (2-2-0)
Also Offered As:  HORT 464B.
Course Description:  Practices used by arborists and landscape managers to plant, appraise and maintain landscape trees.
Prerequisite:  HORT 100 and SOCR 240.
Registration Information:  Credit not allowed for both HORT 464A and HORT 464B. Required field trips.
Term Offered:  Fall.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

HORT 464B  Arboriculture  Credits: 3 (2-2-0)
Also Offered As:  HORT 464A.
Course Description:  Practices used by arborists and landscape managers to plant, appraise and maintain landscape trees.
Prerequisite:  HORT 100 and SOCR 240.
Registration Information:  Credit not allowed for both HORT 464A and HORT 464B. Required field trips. Sections may be offered: Online.
Term Offered:  Fall.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

HORT 465  Landscape Estimating  Credits: 3 (2-2-0)
Course Description:  Landscape construction estimating and bidding, contract documentation and other business practices relevant to landscape design-build and contracting.
Prerequisite:  (MATH 117) and (MATH 118) and (MATH 124 or MATH 125 or MATH 141 or MATH 155) and (HORT 221).
Registration Information:  Must register for lecture and laboratory.
Term Offered:  Fall.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  Yes.

HORT 466  Urban and Community Forestry  Credits: 3 (3-0-0)
Also Offered As:  F 466.
Course Description:  Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite:  F 310 or RS 310 or HORT 221.
Registration Information:  Credit not allowed for both HORT 466 and F 466.
Term Offered:  Fall (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 466F  Urban and Community Forestry  Credit: 1 (1-0-0)
Also Offered As:  F 466.
Course Description:  Policies and management of publicly and privately owned community forests in urbanized areas.
Prerequisite:  F 310 or RS 310 or HORT 221.
Registration Information:  Credit not allowed for both HORT 466 and F 466.
Term Offered:  Fall (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 476  Environmental Plant Stress Physiology  Credits: 3 (3-0-0)
Course Description:  Plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite:  BZ 440.
Registration Information:  Credit not allowed for both HORT 476 and HORT 576.
Term Offered:  Spring (odd years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 477  Enology-History and Winemaking  Credits: 3 (3-0-0)
Course Description:  History and development of the wine industry; mechanics of various processes and factors affecting wine quality and consumer acceptance.
Prerequisite:  CHEM 107, may be taken concurrently and CHEM 108, may be taken concurrently or CHEM 111, may be taken concurrently and CHEM 112, may be taken concurrently.
Term Offered:  Fall (even years).
Grade Mode:  Traditional.
Special Course Fee:  No.

HORT 479  Professional Landscape Practices  Credits: 2 (2-0-0)
Course Description:  Business skills involved in a successful career in the green industry.
Prerequisite:  HORT 100 and HORT 465.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.
HORT 486A Practicum: Floriculture Credits: 2 (0-4-0)
Course Description: Directed experience in applications of floriculture technique. Fall: pest, energy, and production. Spring: production and experimentation.
Prerequisite: HORT 310.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 486B Practicum: General Credits: Var[1-6] (0-0-0)
Course Description: Directed experiences in applications of horticulture techniques and procedures.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 511 Green Roof Culture Credits: 2 (2-0-0)
Course Description: Understand the relevance of green roofs in North America, especially the process, from concept to project completion and maintenance.
Prerequisite: HORT 100 to 199 - at least 3 credits.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 515 Urban Horticulture Credits: 3 (3-0-0)
Also Offered As: AGRI 515.
Course Description: Investigate and evaluate the techniques of incorporating food production systems in the urban and peri-urban environment.
Prerequisite: HORT 450A or HORT 450B or HORT 450C or HORT 450D.
Registration Information: Credit not allowed for both HORT 515 and AGRI 515. Offered only online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 571 Soil-Plant-Water Relations/Water Stress Credits: 3 (3-0-0)
Course Description: Movement of water in the soil-plant-atmosphere continuum. Instrumentation for measuring plant-water relations. Plant responses to drought and salinity.
Prerequisite: BZ 440.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 575 Plant Germplasm Conservation Credits: 2 (2-0-0)
Course Description: Principles, concepts, and methodology for collection, conservation, and utilization of plant genetic resources.
Prerequisite: HORT 460 or SOCR 460.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 576 Advanced Environmental Plant Stress Physiology Credits: 4 (3-0-1)
Course Description: Advanced aspects of plant growth, development and physiology, major sources of stress in plants, global issues in environment and plant stress.
Prerequisite: BZ 440.
Registration Information: Must register for lecture and recitation. Credit not allowed for both HORT 576 and HORT 476.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 588 Supervised Extension Practices Credits: Var[1-18] (0-0-0)
Course Description: Field experiences in extension practices in horticulture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 601 Topics in Root and Rhizosphere Biology Credits: 2 (1-0-1)
Course Description: In-depth overview of the biology of roots and the rhizosphere processes related to roots.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One course in plant physiology; one course in biochemistry. Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HORT 675 Plant Stress Physiology Credits: 3 (3-0-0)
Course Description: Research concepts based on physiological, biochemical, and molecular mechanisms controlling environmental stresses in plants.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HORT 698 Research Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
HORT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: 
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 792 Seminar Credit: 1 (0-0-1)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HORT 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 101 Individual and Family Development (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of life-span human development in the context of the family. Theory and research on the influence of family systems on individuals.
Prerequisite: None.
Restriction: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 175 Developmental Psychology Across the Life Span Credits: 3 (0-0-3)
Also Offered As: PSY 175.
Course Description: Theory and research on physical, cognitive, and psychosocial human development across the life span.
Prerequisite: None.
Registration Information: Offered as a telecourse only. Credit not allowed for both HDFS 175 and PSY 175.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 201 Perspectives in Gerontology Credits: 3 (3-0-0)
Course Description: Multidisciplinary perspectives on a variety of issues in human aging; exploration of careers in gerontology; service-learning with older adults; emphasis on applied gerontology.
Prerequisite: HDFS 101 or PSY 100 or SOC 100.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 217 Creative Experiences for Children Credits: 3 (3-0-0)
Course Description: Theories of play; art, music, and literature as related to child development.
Prerequisite: (HDFS 101 or PSY 100) and (HDFS 277, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 277 Professional Skills Development I Credit: 1 (1-0-0)
Course Description: Professional skills and opportunities relevant to contemporary issues with individuals, families and community.
Prerequisite: CO 150, may be taken concurrently or HONR 193, may be taken concurrently.
Registration Information: Human Development and Family Studies or Early Childhood Education majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 286 Practicum-Professional Skills Credits: 3 (1-6-0)
Course Description: Observational and applied experience with children, adolescents, adults, or families. Exploration of professional skills and opportunities.
Prerequisite: HDFS 101.
Registration Information: Must have completed 30 credits; required background check through CBI, FBI; major in Human Development and Family Studies or Early Childhood Education only. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 302 Marriage and Family Relationships Credits: 3 (3-0-0)
Course Description: Preparation for and adjustment to marital and family relationships throughout the life cycle.
Prerequisite: HDFS 101 or SOC 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Human Development and Family Studies-HDFS (HDFS)

Courses
HDFS 101 Individual and Family Development (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of life-span human development in the context of the family. Theory and research on the influence of family systems on individuals.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).
HDFS 310  Infant and Child Development in Context  Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development from conception through middle childhood in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 311  Adolescent/Early Adult Development in Context  Credits: 3 (3-0-0)
Course Description: Physical, cognitive, and socioemotional development of adolescents and young adults in context of family, relationships, and culture.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 312  Adult Development-Middle Age and Aging  Credits: 3 (3-0-0)
Course Description: Developmental issues and processes pertaining to middle and later adulthood. Contexts in which adult development and aging occur are emphasized.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Completion of 30 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 317  Special Needs in Early Childhood  Credits: 3 (0-0-3)
Course Description: Atypical development in early childhood and recommended practices for fostering development of young children with special needs.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 318  Infancy and Toddlerhood  Credits: 3 (3-0-0)
Course Description: Physical, cognitive, language, and socio-emotional development from pre-birth through 36 months, with an emphasis on applied settings.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 320  Cognitive and Language Development  Credits: 3 (3-0-0)
Course Description: Cognitive and language development from birth to adulthood; including biological, social, and cultural influences.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 332  Death, Dying, and Grief  Credits: 3 (3-0-0)
Course Description: Developmental processes of death and dying related to the dying individuals and their families and for human service agencies.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 334  Family and Parenthood Across the Life Cycle  Credits: 3 (3-0-0)
Course Description: Parenthood as a developmental process and in the context of family relationships throughout the life cycle.
Prerequisite: HDFS 101 or PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 350  Applied Research Methods  Credits: 3 (2-2-0)
Course Description: Interpret, apply, and write about research findings in human development.
Prerequisite: (HDFS 101 or PSY 100) and (STAT 201 or STAT 301 or STAT 311).
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 375  Lifespan Intervention and Prevention Science  Credits: 3 (3-0-0)
Course Description: Intervention and prevention approaches and skills to improve the health, mental health, and well-being of families and individuals across the lifespan.
Prerequisite: HDFS 101.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 402  Couple and Family Studies  Credits: 3 (3-0-0)
Course Description: Theory and research concerning couple and family processes; social contexts in which couples and families change over time.
Prerequisite: HDFS 334.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 403  Families in the Legal Environment  Credits: 3 (3-0-0)
Course Description: Legal issues related to families, including adoption, marriage, divorce, parent and child rights, consumer issues, disability, and estate planning.
Prerequisite: None.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 404  Child Life Theory and Practice  Credits: 2 (2-0-0)
Course Description: Theories and skills related to effective child life practice in hospitals.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 410  Socioemotional Development in Childhood  Credits: 3 (3-0-0)
Course Description: Socioemotional development in children and the influence of biology and socialization within diverse family, school and cultural contexts. Evidence-based practices for helping professionals who will serve children ages 3-8.
Prerequisite: HDFS 310.
Registration Information: Completion of 60 credits. Sections may be offered: Online. Credit allowed for only one of the following: HDFS 410, HDFS 351, HDFS 401.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 411  Developmental Transitions in Adolescence  Credits: 3 (3-0-0)
Course Description: Examination of biological, socio-emotional, cognitive, and behavioral changes during adolescence.
Prerequisite: HDFS 311.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 412  Mental and Physical Health in Adulthood  Credits: 3 (3-0-0)
Course Description: Mental and physical health of adults, contextual factors of development, and implications for prevention, intervention, and public health planning.
Prerequisite: HDFS 312.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 434  Risk and Resilience Across the Lifespan  Credits: 3 (3-0-0)
Course Description: Why some individuals are at high risk for poor developmental outcomes, and why certain individuals fare well despite such risks or adversities. Strong developmental emphasis because resilience is viewed as a process, the results of which may not be manifest for years. There is an ecological emphasis because protective and vulnerability factors often reside in families, schools, neighborhoods.
Prerequisite: HDFS 310, may be taken concurrently and HDFS 311, may be taken concurrently.
Registration Information: Completion of 75 credit minimum. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 439  Administration of Early Childhood Programs  Credits: 3 (3-0-0)
Course Description: Center administration related to program development and operations, budgeting, state regulations and licensing, and personnel issues.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 445  Early Childhood Health, Safety, and Nutrition  Credits: 3 (0-0-3)
Also Offered As: FSHN 445.
Course Description: Planning, promoting and maintaining healthy lifestyle and safe learning environment for preschool children.
Prerequisite: HDFS 310 or PSY 260.
Registration Information: Credit not allowed for both HDFS 445 and FSHN 445. Offered online only.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 470  Campus Connections—Mentoring At-Risk Youth  Credits: 3 (0-4-2)
Course Description: Service-learning course engaging students as mentors with local at-risk youth.
Prerequisite: None.
Registration Information: Written consent of instructor. Completion of AUCC 3C Social and Behavioral Sciences. Required background check through CBI, FBI. Course may be taken for a maximum of 9 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 475  Entrepreneurs and Leaders in Human Services  Credits: 3 (3-0-0)
Course Description: Skills and knowledge about leadership and entrepreneurship in areas pertinent to human development and family studies, as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: HDFS 375.
Registration Information: Completion of 60 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 477  Professional Skills Development II  Credit: 1 (1-0-0)
Course Description: Applications and integration of human development and family background within professional settings.
Prerequisite: HDFS 277.
Registration Information: Completion of 90 credits. Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 484  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
HDFS 488A Field Placement: Human Development and Family Studies Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488B Field Placement: Early Childhood Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488C Field Placement: Pre-Health Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488D Field Placement: Prevention/Intervention Science Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 488E Field Placement: Leadership/Entrepreneurship Credits: Var[1-14] (0-0-0)
Course Description: Application of human development skills in a professional setting.
Prerequisite: HDFS 477, may be taken concurrently.
Registration Information: Required background check through CBI, FBI; Human Development and Family Studies majors only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 4892 Seminar-Program Proposal Development Credits: 3 (0-0-3)
Course Description: Research, development, and oral presentations of program proposals from a family systems and development perspective.
Prerequisite: (HDFS 350) and (HDFS 477, may be taken concurrently or EDUC 400).
Registration Information: Major in Human Development and Family Studies or Early Childhood Education; completion of 90 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 493 Specialized Seminar Credits: 3 (0-0-3)
Course Description: Advanced study of theory, research, and application in a specialized area.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 495C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497A Group Study: Peer Advising Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student’s concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
HDFS 497B Group Study: Undergraduate Outreach and Guidelines Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student’s concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497C Group Study: Student Respect/Wellness Education Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student’s concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497D Group Study: Asian/Pacific American Cultural Center Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student’s concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497E Group Study: Black/African American Cultural Center Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student’s concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 497F Group Study: Honors Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student’s concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 497G Group Study: Human Development Credits: Var[1-3] (0-0-0)
Course Description: Application of human development skills in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of department required. A maximum of 3 credits may count toward a student’s concentration. Course may be repeated up to nine times for elective credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 498A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description: Independent research project presented to a faculty advisor.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 498B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description: Research in human development and family studies emphasizing principles of research.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 498C Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description: Research in human development emphasizing applications to practice.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 499 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Independent research project presented to a faculty committee.
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 500 Issues in Human Development and Family Studies Credits: 3 (2-3-0)
Course Description: A selected, broad issue in human development and family studies emphasizing principles of research.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 501 Readings in the Discipline Credit: 1 (1-0-0)
Course Description: Research in human development and family studies content areas; skills in writing an extended literature review.
Prerequisite: None.
Registration Information: Admission to HDFS master’s program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 505 Human Development for Helping Professionals Credits: 3 (3-0-0)
Course Description: An advanced overview of lifespan development, focusing on wellness promotion and developmental influences on case conceptualization and treatment.
Prerequisite: None.
Registration Information: Graduate standing or written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 520  Family Therapy Practice: Treatment Planning  Credits: 3 (1-2-1)
Course Description: Integration of family/couple therapy theories and practice related to treatment planning and internal family systems therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 521  Family Therapy Practice: Common Factors  Credits: 3 (1-2-1)
Course Description: Application of common factors - e.g., therapeutic alliance - in family and couple therapy.
Prerequisite: None.
Registration Information: Admission to the Marriage and Family Therapy Program. Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 524  Family Theory  Credits: 3 (3-0-0)
Course Description: Major theories and conceptual frameworks for family analysis.
Prerequisite: HDFS 100 to 481 - at least 1 course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 534  Marriage and Family Therapy  Credits: 3 (3-0-0)
Course Description: Theories and techniques.
Prerequisite: HDFS 524.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 549  Research Methods I  Credits: 3 (3-0-0)
Course Description: Introduction to empirical research, data analysis, and interpretation in Human Development and Family Sciences.
Prerequisite: None.
Registration Information: Required: 3 credits of STAT; 3 credits of upper division behavioral sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 550  Research Methods II  Credits: 3 (3-0-0)
Course Description: Research strategies and ethical considerations.
Prerequisite: HDFS 549.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 590B  Workshop: Family Studies  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 592  Grant Writing-Human Services and Research  Credits: 3 (1-0-2)
Course Description: Writing grant proposals that support client services or for research.
Prerequisite: STAT 201.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 593  Seminar–Human Services Leadership  Credit: 1 (0-0-1)
Course Description: Investigates issues relevant to human development and family studies, such as human services, non-profits, and other enterprises related to helping individuals, couples, and families.
Prerequisite: None.
Registration Information: Junior standing. Admission in a graduate program at Colorado State University or consent of instructor. Must have concurrent registration in HDFS 475. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 607  Prevention Science Across the Lifespan  Credits: 3 (2-0-1)
Course Description: Theory, methods, interventions, and standards of evidence in preventing mental, emotional, and behavioral disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper-division behavioral sciences.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 608  Program Planning and Implementation  Credits: 3 (2-2-0)
Course Description: Design or adapt research-based prevention programs from a family-centered, developmentally appropriate perspective.
Prerequisite: HDFS 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 609  Prevention Program Evaluation  Credits: 3 (3-0-0)
Course Description: Concepts and practices of program evaluation in prevention science.
Prerequisite: HDFS 549, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 610 Risk and Resilience Credits: 3 (3-0-0)
Course Description: Risk and resilience processes in human development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Completion of 6 credits in behavioral science courses.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 611 Early Child Development Credits: 3 (3-0-0)
Course Description: Advanced study of developmental changes from conception through age ten; research-based applications to practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper-division behavioral sciences.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 612 Adolescent Development Credits: 3 (3-0-0)
Course Description: Classical and contemporary theory; review of research related to major developmental processes.
Prerequisite: PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.
Restriction: Must be a: Graduate. Graduate cooperative program, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 613 Adult Development and Aging Credits: 3 (3-0-0)
Course Description: Advanced study of developmental change and adaptation during adult years.
Prerequisite: PSY 300 to 499 - at least 3 credits or SOC 300 to 499 - at least 3 credits or HDFS 300 to 499 - at least 3 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 620 Family Therapy Practice: Addictions Credits: 3 (1-2-1)
Course Description: Application of marriage and family therapy theories to clinical practice with a focus on addiction and self-of-the-therapist.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 621 Family Therapy Practice: Topics in Sexuality Credits: 3 (1-2-1)
Course Description: Integration of family therapy theories and practice related to topics in sexuality, termination and referral, and one's personal theory of change.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

HDFS 624 Skills and Techniques in Family Therapy Credits: 3 (3-0-0)
Course Description: Elaboration of techniques and therapy skills based on theory and research.
Prerequisite: HDFS 534.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 636 Aging and the Family Credits: 3 (3-0-0)
Course Description: Theory and research relating to topics on aging during middle and late years of family life cycle.
Prerequisite: HDFS 300 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: One course in adult development or 6 credits of upper-division behavioral science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 644 Foundations in Family Therapy Credits: 3 (3-0-0)
Course Description: Contemporary research and treatment strategies for parenting problems, family violence, and substance abuse.
Prerequisite: HDFS 524.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 650 Multivariate Research Methods I Credits: 3 (2-0-1)
Course Description: Statistical concepts and analysis.
Prerequisite: HDFS 550.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 676 Professional Skills Development Credits: 3 (3-0-0)
Course Description: Fundamental skills of marriage and family therapy; clinic procedures; case assessment, planning, and management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Marriage and Family Therapy Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 677 Ethical and Legal Issues Credits: 3 (0-0-3)
Course Description: Ethical and legal issues in field of human development and family studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 686A Practicum: Human Development Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686B Practicum: Developmental Assessment Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 686C Practicum: Early Childhood Education Credits: Var[1-15] (0-0-0)
Course Description: Application of human development skills in a variety of professional settings.
Prerequisite: HDFS - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687A Internship: Human Development Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 500 to 799 - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687B Internship: Family Studies Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 500 to 799 - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 687C Internship: Marriage and Family Therapy Credits: Var[1-18] (0-0-0)
Course Description: Application of advanced human development skills in professional settings.
Prerequisite: HDFS 500 to 799 - at least 9 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 692A Family Issues: Intimacy and Human Sexuality Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692B Family Issues: Parenting Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692C Family Issues: Family Policy and Programming Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Summer (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 692D Family Issues: Contemporary Family Issues Credits: 3 (0-0-3)
Course Description: Current issues in the family with implications for intervention, therapy, and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Six credits of upper division behavioral sciences.
Term Offered: Fall, Spring, Summer. Offered as needed.
Grade Mode: Traditional.
Special Course Fee: No.
HDFS 695A Independent Study: Human Development Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695B Independent Study: Family Studies Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 695C Independent Study: Early Childhood Education Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 697 Group Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698A Research: Human Development Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 698B Research: Family Studies Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: HDFS 550.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

HDFS 700 Multivariate Research Methods II Credits: 3 (3-0-0)
Course Description: Applications of multivariate methods to research in applied developmental science.
Prerequisite: HDFS 650.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 772 Marriage and Family Therapy Supervision Credits: 3 (2-0-1)
Course Description: Prepares professionals to supervise marriage and family therapists in a variety of settings.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792A Seminar: Lifespan Socioemotional Development Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792B Seminar: Lifespan Cognitive Development Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 792C Seminar: Special Topics Credits: 3 (0-0-3)
Course Description: Current issues in applied developmental science involving a synthesis of theory, research, and application.
Prerequisite: HDFS 500.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

HDFS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

HDFS 710 Theories of Applied Developmental Science Credits: 3 (3-0-0)
Course Description: Theories of applied developmental science, and implications for intervention and policy.
Prerequisite: HDFS 500.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

Interior Design-INTD (INTD)

Courses

INTD 129 Introduction to Interior Design Credits: 3 (3-0-0)
Course Description: Interior design discipline's professional values with emphasis on elements and principles of design.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 166 Visual Communication-Sketching  Credits: 3 (0-6-0)
Course Description: Hand drafting, free-hand sketching and conceptualization to communicate interior design concepts visualizing 2 and 3 dimensional representations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 200 Housing Values in America  Credits: 3 (3-0-0)
Course Description: Housing issues in the U.S.; values, norms, roles of government and building professions; interaction of issues with U.S. public values to meet housing needs.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 201 Two-Dimensional Fundamentals-Interior Design  Credits: 3 (0-6-0)
Course Description: Demonstration of 2-dimensional elements and principles of design incorporating creative thinking, design fundamentals, design communication skills.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 210 Interior Design Anatomy  Credits: 3 (3-0-0)
Course Description: Applying basic concepts of human behavior, anthropometrics, and space planning to residential interiors.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 235 Interior Design Technologies  Credits: 3 (2-2-0)
Course Description: Principles and procedures required in interpreting and producing building site plans, floor plans, elevations, sections, and interior details.
Prerequisite: INTD 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 236 Three-Dimensional Thinking  Credits: 3 (0-6-0)
Course Description: Demonstration and application in visualizing interior space in three dimensions.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 255 Residential Interiors  Credits: 3 (0-0-3)
Course Description: Theories, issues, and planning elements that impact the design of residential interiors.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 256 Computer-Aided Design for Interior Designers  Credits: 3 (1-4-0)
Course Description: Use of computer-aided design (CAD), specifically two-dimensional and three-dimensional drafting using PC software.
Prerequisite: INTD 129 and INTD 166.
Registration Information: Design scenario advancement. Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 256 Visual Communication-Multi-Media  Credits: 3 (0-6-0)
Course Description: Visual communication using advanced sketching rendering, manually and with technology, and alternative presentation methods.
Prerequisite: INTD 210 and INTD 236.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 276 Interior Design I  Credits: 3 (0-6-0)
Course Description: Application of design process to small interior design projects. Design solutions communicated using manual and technology tools.
Prerequisite: INTD 256 and INTD 210 and INTD 236.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
INTD 296A Group Study: Space Planning and Application  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Design scenario advancement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
INTD 296B Group Study: Design Application  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Design scenario advancement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
INTD 330 Lighting Design  Credits: 3 (2-2-0)
Course Description: Application of lighting design in interior environments.
Prerequisite: CON 371, may be taken concurrently and INTD 276 with a minimum grade of C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
INTD 336 Color Credits: 3 (0-0-3)
Course Description: Color theories, principles, trends and application in design.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 340 Interior Materials and Finishes Credits: 3 (3-0-0)
Course Description: Analysis of materials and resources for interiors.
Prerequisite: INTD 276 with a minimum grade of C.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 350 Codes-Health and Safety Credits: 3 (3-0-0)
Course Description: Health and safety issues in interior design, including codes, regulations, and universal design.
Prerequisite: (INTD 210) and (INTD 276, may be taken concurrently or INTD 376, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 356 Professional Communications-Interior Design Credits: 3 (3-0-0)
Course Description: Mastery of written communication skills required in the field of interior design.
Prerequisite: (CO 150 or HONR 193) and (INTD 276 with a minimum grade of C).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 376 Interior Design II Credits: 3 (0-6-0)
Course Description: Application of design components to medium-scale residential and non-residential interior design projects.
Prerequisite: INTD 330 and INTD 340 and CON 371.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 384 Supervised College Teaching Credits: Var[1-10] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 400 Interior Design Research Proposal Credits: 4 (1-4-1)
Course Description: Research, development, and presentation of a programming proposal for a large scale interior design project with service learning component.
Prerequisite: INTD 376 with a minimum grade of C.
Registration Information: Must register for lecture, laboratory, and recitation. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 450 Travel Abroad-Sustainable Building Credits: 3 (3-0-0)
Also Offered As: CON 450
Course Description: Major components of sustainable design and construction, energy, healthy buildings, natural resources and other environmental issues.
Prerequisite: None.
Registration Information: Credit not allowed for both INTD 450 and CON 450.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 476 Interior Design Project Credits: 4 (0-8-0)
Course Description: Large scale projects representing research-based design solutions, illustrating synthesis and analysis of entry level concepts, portfolio development.
Prerequisite: INTD 400 with a minimum grade of C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

INTD 487 Internship Credits: Var[3-16] (0-0-0)
Course Description: 
Prerequisite: INTD 356 and INTD 376 with a minimum grade of C.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496A Group Study: Program Skills Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INTD 496B Group Study: Design Application Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
INTD 550 Universal Design Credits: 3 (3-0-0)
Course Description: Analysis and evaluation of universal design as it applies to diverse population segments and interior environments.
Prerequisite: INTD 376 with a minimum grade of C, may be taken concurrently.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 575 Problems-Interior Design Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: INTD 376 with a minimum grade of C - at least 9 credits.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INTD 675 Problems-Interior Design Credits: Var[1-8] (0-0-0)
Course Description:
Prerequisite: INTD 575 - at least 4 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

International Education-IE (IE)

Courses
IE 116 Plants and Civilizations (GT-SS3) Credits: 3 (2-0-1)
Also Offered As: AGRI 116.
Course Description: Plant origins and their relationships with cultures/civilizations as food, spices, perfumes, medicine, art, mythology, religion, wars, exploration, slavery.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both IE 116 and AGRI 116.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

IE 179 Globalization: Exploring Our Global Village (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis and implications of social, cultural, economic, and political change in the context of globalization and transnational relationships.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

IE 270 World Interdependence-Population and Food (GT-SS3) Credits: 3 (3-0-0)
Also Offered As: AGRI 270.
Course Description: Survey of world population and food; emphasis on understanding the problems and opportunities in a global context.
Prerequisite: None.
Registration Information: Credit not allowed for both IE 270 and AGRI 270.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

IE 271 India Credits: 3 (3-0-0)
Course Description: Interdisciplinary interpretation of philosophical, historical, cultural, physical, social, and technological influences shaping modern India.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 272 World Interdependence - Current Global Issues Credits: 3 (3-0-0)
Course Description: A global perspective focusing on an international topic receiving current media coverage.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 300 Global Studies Credits: 3 (3-0-0)
Course Description: Traditional and changing institutions, systems, values and identities in selected cultures and how they are perceived, portrayed, and experienced.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 370 Model United Nations Credits: 3 (3-0-0)
Course Description: Structure and function of the United Nations; role of international organizations in international relations; opportunity to practice modeling role of UN representatives.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E.

IE 382A Study Abroad: Community Engagement in Nicaragua Credit: 1 (0-0-1)
Course Description: Exploration of the history and culture of Nicaragua. Fair trade processes, issues, and organizations.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
IE 450  International Social Welfare and Development  Credits: 3 (2-0-1)
Also Offered As: SOWK 450.
Course Description: Framework of social welfare and development in international area; social need with focus on cultures/countries in transition.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both IE 450 and SOWK 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 470  Women and Development  Credits: 3 (3-0-0)
Course Description: Research and policy issues related to women in developing countries.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 471  Children and Youth in Global Context  Credits: 3 (3-0-0)
Course Description: Global issues affecting children and youth are examined in cultural context.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 472  Education for Global Peace  Credits: 3 (3-0-0)
Course Description: Peacekeeping, peacemaking and peace-building on micro and macro levels, and education's role in them, as key components for sustaining global peace.
Prerequisite: None.
Registration Information: Upper-division standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

IE 479  International Development Theory and Practice  Credits: 3 (3-0-0)
Also Offered As: ANTH 479.
Course Description: Contemporary issues in international community and economic development with practical and theoretical analysis from interdisciplinary perspectives.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Credit not allowed for both IE 479 and ANTH 479.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 482A  Travel Study: Global Studies-Africa  Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482B  Travel Study: Global Studies-Asia  Credits: Var[1-6] (0-0-0)
Course Description: Study abroad session focusing on business and economic conditions in Japan.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482C  Travel Study: Global Studies-Australia/Oceania  Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482D  Travel Study: Global Studies-Canada/North America  Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482E  Travel Study: Global Studies-Europe  Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482F  Travel Study: Global Studies-Contemporary Cuba  Credits: Var[1-6] (0-0-0)
Course Description: Interdisciplinary Travel Course on Contemporary Cuba; history, politics, economics, and culture of Cuba.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 482G  Travel Study: Global Studies-Middle East  Credits: Var[1-6] (0-0-0)
Course Description: Current global issues, topics, traditions studied in one or more countries of the region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

IE 492  International Education Seminar  Credits: Var[1-3] (0-0-0)
Course Description: Topics in international education.
Prerequisite: None.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
IE 517 Perspectives in Global Health Credits: 3 (0-0-3)
Also Offered As: PSY 517.
Course Description: Science, skills, and beliefs directed at the
maintenance and improvement of health for all people.
Prerequisite: None.
Registration Information: Credit not allowed for both IE 517 and PSY 517.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

IE 550 Ethics and International Development Credits: 3 (3-0-0)
Also Offered As: PHIL 550.
Course Description: Ethical reflection applied to development goals,
strategies of Third World countries; relations between developed and
developing countries.
Prerequisite: None.
Registration Information: Written consent of instructor. Credit not allowed for both IE 550 and PHIL 550.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

IE 679 Applications of International Development Credits: 3 (3-0-0)
Also Offered As: ANTH 679.
Course Description: In-depth interdisciplinary analysis of theoretical and practical issues in implementing economic and community-based international development programs.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate standing. Credit not allowed for both IE 679 and ANTH 679.
Terms Offered: Fall, Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

IE 692 International Education Seminar Credits: Var[1-3] (0-0-0)
Course Description: Topics in international education.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INST 300 Approaches to International Studies Credits: 3 (0-0-3)
Course Description: Interdisciplinary and comparative analytical approaches to the field of international studies.
Prerequisite: GR 100.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

INST 301 Global Commodities across the Disciplines Credits: 3 (3-0-0)
Course Description: Uses an interdisciplinary lens to explore the nature and significance of global commodities. Analyzes the cultural, political, economic, and environmental dimensions of everyday objects and objectification. Familiarizes students with the research content and methods of International Studies, illustrating applications of interdisciplinary research.
Prerequisite: GR 100 and INST 200.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

INST 484 Supervised College Teaching Credit: 1.5 (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INST 487 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

INST 492 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: INST 300.
Registration Information: International Studies majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

INST 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

International Studies-INST (INST)

Courses

INST 200 Interdisciplinary Approaches to Globalization Credits: 3 (3-0-0)
Course Description: Uses an interdisciplinary lens to explore and elucidate the issues, themes, and problems associated with globalization.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Intra-University-IU (IU)

Courses

IU 140 Foundations of Sport Management Credits: 2 (2-0-0)
Course Description: Introduces various sectors of the field of sport management to develop an understanding of the breadth of opportunities throughout the industry.
Prerequisite: None.
Registration Information: This is a partial semester course. Admission to the Interdisciplinary Minor in Sports Management.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
IU 150 Diverse Students in Higher Education Credits: 2 (2-0-0)
Course Description: Issues surrounding educational opportunity and social mobility through direct mentoring with high school students.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
IU 170 A Call to Lead I: Theories and Skills Credits: 2 (1-0-1)
Course Description: Fundamentals of leadership theories and skills.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Member of the President's Leadership Program; written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
IU 171 A Call to Lead II: Social Change Model Credits: 2 (1-0-1)
Course Description: Social change model of leadership development.
Prerequisite: IU 170.
Registration Information: Member of the President’s Leadership Program; written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
IU 172 New Student Seminar Credit: 1 (0-0-1)
Course Description: Learn about and explore various academic/career options within the major tracks at CSU to inform decisions related to choice of major.
Prerequisite: None.
Registration Information: This is a partial semester course. Undeclared first-year students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
IU 186 Practicum- Career Exploration Credits: Var[1-6] (0-0-0)
Course Description: Field experience applying leadership theories/principles through professional projects.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
IU 193 Freshman Seminar Credit: 1 (0-0-1)
Course Description: Academic study in small-class setting. Topics vary by instructor.
Prerequisite: None.
Registration Information: Students who have earned fewer than 30 credits (CSU and transfer). Maximum of 1 credit allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
IU 198 Freshman Laboratory Research Credit: 1 (0-3-0)
Course Description: Hands-on research on an academic research project.
Prerequisite: None.
Restriction: Must be a Freshman.
Registration Information: Freshmen standing only. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
IU 270 Leadership Styles I: Personal Application Credits: 2 (1-0-1)
Course Description: Leadership styles and contexts for personal application.
Prerequisite: None.
Registration Information: Member of President's Leadership Program. Written consent of instructor. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
IU 271 Leadership Styles II: Prominent Leaders Credits: 2 (1-0-1)
Course Description: Leadership styles and contexts of prominent leaders for personal application.
Prerequisite: IU 270
Registration Information: Member of President's Leadership Program. Written consent of instructor. Must register for lecture and recitation.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
IU 273 Leadership Techniques for Greeks Credits: 2 (1-0-1)
Course Description: Critical elements of analytical and intellectual examination and reflection of certain core issues in the practice of leadership.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
IU 470 Effective Leadership I: Success as a Leader Credits: 3 (2-0-1)
Course Description: Personal leadership skill development and its relationship to success as a leader.
Prerequisite: None.
Registration Information: Member of the President’s Leadership Program; written consent of instructor. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
IU 471 Effective Leadership II: Vision and Change Credits: 3 (2-0-1)
Course Description: Individual personal leadership styles; relationship between personal skill development and successful leadership.
Prerequisite: IU 470.
Registration Information: Member of President's Leadership Program; written consent of instructor. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
IU 486 Practicum for Interdisciplinary Leadership Credits: Var[1-4] (0-0-0)
Course Description: Field experience applying leadership theories/principles through professional projects.
Prerequisite: IU 171 and IU 271.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
IU 487 Internship for Interdisciplinary Leadership Credits:
Var[1-4] (0-0-0)
Course Description: Internship applying leadership theories/principles in a professional setting.
Prerequisite: IU 171 and IU 271.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
IU 498 Research for Interdisciplinary Leadership Credits:
Var[1-4] (0-0-0)
Course Description: Research exploring leadership and one's academic discipline.
Prerequisite: IU 171 and IU 271.
Registration Information: Written consent of advisor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 204 Radio Operations Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to operate a radio station.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 210 Newswriting Credits: 3 (1-4-0)
Course Description: Theory and practice in newswriting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory for face-to-face offerings. Sections may be offered: Online. Credit not allowed for both JTC 210 and JTC 192. Sections offered as Face-to-Face 03(1-4-0) or Online only 03(3-0-0).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 211 Visual Communication Credits: 3 (2-2-0)
Course Description: Theory and techniques for visually presenting information in various media industries.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
JTC 270 Analyzing Data in Journalism and Media Credits: 3 (2-0-1)
Course Description: Application of quantitative concepts and methodologies of data analysis to investigation of media and communication problems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 300 Professional and Technical Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Professional writing and presentation skills applied to students' major fields.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 301 Corporate and Professional Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Principles and practice of effective corporate communication with emphasis on written professional reports.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).
JTC 203 Television Studio Production Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to produce programs in a television studio.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 100 Media in Society (GT-SS3) Credits: 3 (3-0-0)
Course Description: Role of media in American democracy; impact of media on individuals and society.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).
JTC 192 Freshman Seminar Credits: 3 (1-4-0)
Course Description: Basic journalism skills; newsgathering and newswriting.
Prerequisite: None.
Registration Information: Admission as JTC major. Credit not allowed for both JTC 192 and JTC 210. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 210 Newswriting Credits: 3 (1-4-0)
Course Description: Theory and practice in newswriting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory for face-to-face offerings. Sections may be offered: Online. Credit not allowed for both JTC 210 and JTC 192. Sections offered as Face-to-Face 03(1-4-0) or Online only 03(3-0-0).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 204 Radio Operations Credit: 1 (0-0-1)
Course Description: Hands-on application of the skills needed to operate a radio station.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 210 Newswriting Credits: 3 (1-4-0)
Course Description: Theory and practice in newswriting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory for face-to-face offerings. Sections may be offered: Online. Credit not allowed for both JTC 210 and JTC 192. Sections offered as Face-to-Face 03(1-4-0) or Online only 03(3-0-0).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 211 Visual Communication Credits: 3 (2-2-0)
Course Description: Theory and techniques for visually presenting information in various media industries.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
JTC 270 Analyzing Data in Journalism and Media Credits: 3 (2-0-1)
Course Description: Application of quantitative concepts and methodologies of data analysis to investigation of media and communication problems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 300 Professional and Technical Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Professional writing and presentation skills applied to students' major fields.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).
JTC 301 Corporate and Professional Communication (GT-CO3) Credits: 3 (2-0-1)
Course Description: Principles and practice of effective corporate communication with emphasis on written professional reports.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Addl Comm - Adv Writing 2, Advanced Writing (GT-CO3).
JTC 305 Media and Global Cultural Identity Credits: 3 (3-0-0)
Course Description: Examines cultural diversity and how the media influences cultural identities.
Prerequisite: None.
Registration Information: Sophomore standing. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 308 Mobile Media Technology and Communication Credit: 1 (1-0-0)
Course Description: Using mobile technology as a tool in journalism.
Prerequisite: None.
Registration Information: Sophomore standing.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 310 Copy Editing Credits: 3 (2-2-0)
Course Description: Theory of copy preparation and editing; publication layout.
Prerequisite: JTC 100 and JTC 210.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 311 History of Media Credits: 3 (3-0-0)
Course Description: Media development, growth, trends within context of political, social, and economic change.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 316 Multiculturalism and the Media Credits: 3 (3-0-0)
Course Description: Media and multiculturalism with emphasis on race, ethnicity, and other protected groups.
Prerequisite: None.
Registration Information: Sophomore standing. Credit not allowed for both JTC 316 and ETST 316.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320A Reporting: General News Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320B Reporting: Sports Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320C Reporting: Business Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320D Reporting: Government and Political Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320E Reporting: Health and Medicine Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320F Reporting: Technology and Innovation Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320G Reporting: Education Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 320H Reporting: Special Topics Credits: 3 (1-4-0)
Course Description: Theory, methods, and practices for gathering information and reporting news.
Prerequisite: JTC 210.
Registration Information: Students may take JTC 320 only once for credit.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 326 Online Storytelling and Audience Engagement Credits: 3 (2-2-0)
Course Description: Production, theory, and techniques in online and mobile device storytelling, information sharing, and audience engagement.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 328 Feature Writing Credits: 3 (3-0-0)
Course Description: Theory, methods and practice of reporting and writing feature stories, including human-interest, travel/adventure, reflective and in-depth articles.
Prerequisite: JTC 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

JTC 335 Digital Photography Credits: 3 (2-2-0)
Course Description: Basic photographic theory and practice using digital camera and image processing technology.
Prerequisite: JTC 211.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 340 Digital Video Editing Credits: 3 (2-2-0)
Course Description: Theory and technique of editing picture and sound on digital platforms.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 341 TV News Writing, Reporting and Producing Credits: 3 (2-2-0)
Course Description: Practical application of principles, theory, and methods used in television newswriting, reporting, and producing.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 342 Writing for Specialized Electronic Media Credits: 3 (2-2-0)
Course Description: Audience and subject research; script structure and development; narrative techniques; visual story and role of visual media as change agents.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 343 Advanced Television News Production Credits: 3 (2-2-0)
Course Description: Advanced theory and practice of reporting and producing television news; basics of television news management.
Prerequisite: JTC 341.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 345 Electronic Field Production Credits: 3 (2-2-0)
Course Description: Theory and techniques of video field production emphasizing news, current affairs, and special interest programs.
Prerequisite: JTC 340.
Registration Information: Must register for lecture and laboratory. Required field trips.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 347 Audio Production and Editing Credits: 3 (3-0-0)
Course Description: Principles and practice of producing, recording, mixing and editing sound for films, television, and video.
Prerequisite: JTC 340.
Registration Information: Junior Standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 350 Public Relations Credits: 3 (3-0-0)
Course Description: Public relations principles and practices of business, industry, education, and public agencies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 351 Publicity and Media Relations Credits: 3 (2-2-0)
Course Description: Public relations techniques to gain exposure in news and entertainment media.
Prerequisite: JTC 210 and JTC 211.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 352 University Public Relations Credit: 1 (1-0-0)
Course Description: Overview of a multi-faceted university public relations operation, constituencies, staff, management and products.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 353 Communications Campaigns Credits: 3 (3-0-0)
Course Description: Development of professional communications programs, including analysis and research, strategy, implementation and evaluation.
Prerequisite: (JTC 210) and (JTC 350 or JTC 355 or JTC 365).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 355 Advertising Credits: 3 (3-0-0)
Course Description: Advertising principles and techniques used to develop effective advertising campaigns.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 356 Advertising Creativity and Copywriting Credits: 3 (3-0-0)
Course Description: Principles and practices producing advertising materials-print, broadcast, digital, out-of-home media, direct response, and collateral.
Prerequisite: JTC 210 and JTC 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 357 Persuasion in Advertising Credits: 3 (3-0-0)
Course Description: Theoretical issues in the study of persuasion and its application in creating advertising campaigns.
Prerequisite: JTC 355.
Registration Information: Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 358 Advertising Media Buying and Selling Credits: 3 (3-0-0)
Course Description: Principles of advertising, planning, assessment and sales for client, agency and media organization personnel.
Prerequisite: JTC 210 and JTC 355.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 359 Writing for Specialized Magazines Credits: 3 (2-2-0)
Course Description: Writing articles for agricultural, business, hobby, technical, trade, and other specialized periodicals whose readers use information to make decisions.
Prerequisite: JTC 210.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 360 Data Journalism Credits: 3 (3-0-0)
Course Description: Computer assisted journalistic reporting.
Prerequisite: JTC 211.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 361 Trends in Digital Communication Credits: 3 (3-0-0)
Course Description: Issues and research in computer-mediated communication relating to individuals, groups, community, and society.
Prerequisite: JTC 210.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 362 Travel Journalism in Croatia Credits: 3 (3-0-0)
Course Description: Study and practice of international travel journalism, including newspaper and magazine writing, photography, video, social media, and blogs.
Prerequisite: CO 150 or JTC 210.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 363 Communication Practicum Credit: 1,3 (0-0-0)
Course Description: Practicum in using the different communication tools that comprise student media.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
JTC 410  Newspaper Editing  Credits: 2 (2-0-0)
Course Description: Editorial techniques, responsibilities, news evaluation.
Prerequisite: JTC 310.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 411  Media Ethics and Issues Credits: 3 (3-0-0)
Course Description: Professional ethics, issues of media performance and of the relation of media systems to the social systems.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 412  International Mass Communication Credits: 3 (3-0-0)
Course Description: Media communication systems, their roles throughout the world; news flow; propaganda in national development; role of foreign correspondents.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 413  New Communication Technologies and Society Credits: 3 (3-0-0)
Course Description: Political, economic, social, philosophical, legal, and educational impacts of new technologies.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 414  Media Effects Credits: 3 (3-0-0)
Course Description: Perspectives on audience processes and media effects on individuals and society.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 415  Communications Law Credits: 3 (3-0-0)
Course Description: Constitutional, statutory law of political speech, obscenity, advertising, libel, privacy, copyright, information ownership and access.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 416  Global Communication Technologies Credits: 3 (3-0-0)
Course Description: Broad-based survey of evolving and emergent global communication technologies.
Prerequisite: JTC 210.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 417  Information Graphics Credits: 3 (2-0-1)
Course Description: Static and interactive data visualization and information design using charts, graphs, maps and other visual elements.
Prerequisite: JTC 211.
Registration Information: Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 418  Journalism, Peace, and War Credits: 3 (3-0-0)
Course Description: How the news media can contribute to a more harmonious world, more frequent conflict resolution, and the general well-being of all people.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 419  Food and Natural Resources Communication Credits: 3 (3-0-0)
Course Description: Natural resources issues and the role of news media, PR, and advertising and how people form beliefs about food and natural resources in communication.
Prerequisite: None.
Registration Information: Junior, senior, or graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 420  Advanced Reporting Credits: 3 (1-4-0)
Course Description: Advanced techniques for gathering and evaluating information; interpretive reporting of public affairs issues.
Prerequisite: JTC 310 and JTC 320 and JTC 211.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 421  Media, Business, and Economics Credits: 3 (3-0-0)
Course Description: Media coverage of U.S. and global businesses, economies, markets, recessions, crime, and government regulation.
Prerequisite: JTC 326, may be taken concurrently.
Registration Information: Business Minor enrollment recommended.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 422  Entrepreneurial Journalism Credits: 3 (3-0-0)
Course Description: The concepts and practices of developing media content solutions for the digital age.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 425 Strategic Multicultural Communication Credits: 3 (3-0-0)
Course Description: Identify, formulate and implement effective strategies in integrated advertising and communication campaigns to effectively connect with individuals of Hispanic/Latino, African-American and Asian descent as well as the LGBT sub-segments of the general market in the U.S.; consideration of the globalized marketplace and consumers across under-served markets internationally.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 430 Advanced Digital Documentary Photography Credits: 3 (2-2-0)
Course Description: Conceptualization, production, and editing of photographic documentaries.
Prerequisite: JTC 326 and JTC 335.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 433 Advanced Video Editing Credits: 3 (3-0-0)
Course Description: Professional video editing practices, theories, and techniques with practical applications using current hardware and software.
Prerequisite: JTC 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 435 Documentary Video Production Credits: 3 (2-3-0)
Course Description: Writing, directing, and editing of long-form television documentaries.
Prerequisite: JTC 345.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 440 Advanced Electronic Media Production Credits: 3 (2-2-0)
Course Description: Techniques and concepts used in advanced media production for television.
Required field trips.
Prerequisite: JTC 341 and JTC 345.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

JTC 445 Communication in Human-Computer Interaction Credits: 3 (3-0-0)
Course Description: Evolution of human-computer interaction, from teletypewriters to virtual reality technologies.
Prerequisite: JTC 211.
Registration Information: Junior standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 450 Public Relations Cases Credits: 3 (3-0-0)
Course Description: Analysis of specializations in the field; use of media to achieve objectives with target audiences.
Prerequisite: JTC 350.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 454 Travel Abroad--Media Studies in Europe Credits: 3 (2-0-1)
Course Description: Field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Junior or senior standing. Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 456 Documentary Film as a Liberal Art Credits: 3 (2-2-0)
Also Offered As: LB 456.
Course Description: Documentary film and its role in human history, culture, and social interaction.
Prerequisite: None.
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Credit not allowed for both JTC 456 and LB 456.
Junior or senior standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 460 Senior Capstone Credits: 3 (3-0-0)
Course Description: Integration and reflection for seniors with a career component that will prepare them for the job market.
Prerequisite: (JTC 326) and (JTC 000 to 9999 - at least 27 credits).
Restriction: Must be a: Junior, Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 461 Writing About Science, Health, and Environment Credits: 3 (2-2-0)
Course Description: Writing about science, health, and the environment for lay audiences from a journalistic perspective.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 464 Technical Communication Credits: 3 (2-2-0)
Course Description: Writing and producing technical and scientific information for electronic and print media for professionals.
Prerequisite: JTC 210 or JTC 300 or LB 300.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
JTC 465 Specialized and Technical Editing Credits: 3 (2-2-0)
Course Description: Editorial purpose, techniques, and evaluation of specialized and technical print and online information.
Prerequisite: (JTC 210 or JTC 300 or LB 300) and (JTC 211) and (JTC 326 or JTC 335 or JTC 341 or JTC 342 or JTC 351 or JTC 361 or JTC 371 or JTC 372) and (JTC 461 and JTC 464).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 468 Convergence and Hypermedia Credits: 3 (3-0-0)
Course Description: Applications of theories of convergence, hypermedia, and social practices in computer-mediated communication. Development of a professional portfolio.
Prerequisite: JTC 310 and JTC 365.
Registration Information: JTC 310; JTC 365; 9 credits selected from JTC 326, JTC 372, JTC 373, or JTC 487.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 470 Transmedia Storytelling Credits: 3 (3-0-0)
Course Description: Examining and developing transmedia storytelling techniques and products that are applied to a single topic, entity or organization.
Prerequisite: JTC 326.
Registration Information: Junior standing. Sections may be offered: Online.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 471 Research for Public Communicators Credits: 3 (3-0-0)
Course Description: Skills, knowledge and strategies needed to read, interpret, evaluate, and communicate about research reports across diverse fields.
Prerequisite: STAT 000 to 9999 - at least 1 course or ST 000 to 9999 - at least 1 course or STCC 000 to 9999 - at least 1 course.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 482 International Media Studies Credits: 3 (0-0-3)
Course Description: A field survey of international media systems, technologies, and providers in diverse national and regional cultures.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 487 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of department.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 490 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495A Independent Study: Electronic Reporting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495B Independent Study: Editing Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495C Independent Study: Photojournalism Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495D Independent Study: Public Relations Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495E Independent Study: Readings Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495F Independent Study: Reporting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 495G Independent Study: Technical Communication Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
JTC 496 Group Study Credits: Var[1-3] (0-0-0)  
Course Description:  
Term Offered: Fall.  
Grad Mode: Instructor Option.  
Special Course Fee: No.  
JTC 500 Communication Research and Evaluation Methods Credits: 4 (4-0-0)  
Course Description: Theory and applied communication research and evaluation methodologies for assessing and improving communication in technological environment.  
Prerequisite: None.  
Registration Information: Credit not allowed for both JTC 500 and JTC 471.  
Term Offered: Fall.  
Grad Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
JTC 501 Process and Effects of Communication Credits: 4 (4-0-0)  
Course Description: Examination of communication theory including communicator credibility, messages, channels, audiences, and information, behavior, and attitude change.  
Prerequisite: None.  
Registration Information: Written consent of instructor.  
Term Offered: Fall.  
Grad Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
JTC 511 Corporate Media Ethics and Issues Credits: 3 (3-0-0)  
Course Description: Professional ethics in corporate and media settings.  
Prerequisite: None.  
Registration Information: Graduate standing. Offered as an online course only.  
Terms Offered: Fall, Spring.  
Grad Mode: Traditional.  
Special Course Fee: No.  
JTC 513 Impacts of New Communication Technologies Credits: Var[1-2] (0-0-0)  
Course Description: Current topics and issues regarding uses and impacts of video and computer-based communication technologies.  
Prerequisite: None.  
Terms Offered: Fall, Spring.  
Grad Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
JTC 526 Digital Media Writing and Production Credits: 3 (3-0-0)  
Course Description: Writing and producing media content that will be delivered via a variety of communication channels to diverse publics.  
Prerequisite: None.  
Registration Information: Graduate standing.  
Term Offered: Summer.  
Grad Mode: Traditional.  
Special Course Fee: No.  
JTC 535 Electronic Media Regulation and Policy Credits: 3 (3-0-0)  
Course Description: Role of legislators, regulatory agencies, judiciary and public in the evolution of U.S. broadcast and digital media. Implications for press.  
Prerequisite: None.  
Term Offered: Fall.  
Grad Mode: Traditional.  
Special Course Fee: No.  
JTC 540 Corporate Digital Video Editing Credits: 3 (3-0-0)  
Course Description: Advanced theory and techniques of digital video editing in a corporate setting.  
Prerequisite: None.  
Registration Information: Graduate standing. Offered as an online course only.  
Terms Offered: Fall, Spring, Summer.  
Grad Mode: Traditional.  
Special Course Fee: No.  
JTC 544 Corporate and Institutional Media Production Credits: 3 (2-3-0)  
Course Description: Advanced techniques in media production and management in corporate and institutional settings.  
Prerequisite: None.  
Registration Information: Must register for lecture and laboratory.  
Term Offered: Spring.  
Grad Mode: Traditional.  
Special Course Fee: No.  
JTC 545 Organizational Media Production Credits: 3 (3-0-0)  
Course Description: Incorporation of multimedia content in video production in governmental, corporate and institutional media production.  
Prerequisite: None.  
Registration Information: Graduate standing.  
Term Offered: Summer.  
Grad Mode: Traditional.  
Special Course Fee: No.  
JTC 550 Public Relations Credits: 3 (3-0-0)  
Course Description: Contemporary public relations principles and practices.  
Prerequisite: None.  
Registration Information: Graduate standing. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grad Mode: Traditional.  
Special Course Fee: No.  
JTC 560 Managing Communications Systems Credits: 3 (3-0-0)  
Course Description: Examination of role, responsibilities of communication managers in translating theory into effective, applied communication programs.  
Prerequisite: None.  
Registration Information: Written consent of instructor.  
Term Offered: Spring.  
Grad Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
JTC 568A Journalism for High School Advisers: Journalism Concepts Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grad Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  
JTC 568B Journalism for High School Advisers: Newspapers Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grad Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.
JTC 568C  Journalism for High School Advisers: Yearbooks  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

JTC 570  Political Economy of Global Media  Credits: 3 (3-0-0)
Course Description: Examination of the changing media information system worldwide and the role of social, political, legal and economic forces upon it.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 571  Digital Media Research and Evaluation Methods  Credits: 3 (3-0-0)
Course Description: Basic conceptual processes and tools for conducting applied research in the field of communication; research tools in real-world professions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 572  Corporate Web Design and Management  Credits: 3 (3-0-0)
Course Description: Design, development, and management of corporate digital media content.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 573  Strategic Digital Communication  Credits: 3 (3-0-0)
Course Description: Development, implementation and assessment of digital communication projects and campaigns/programs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

JTC 574  Political Communication and Theory  Credits: 3 (3-0-0)
Course Description: Theories of political communication and practice as they relate to the field of media systems, organizations and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 575  Communication Behavior and Theory  Credits: 3 (3-0-0)
Course Description: Theories of communication behavior and practice as they relate to the field of media systems, organizations and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 576  Communication Law and Policy  Credits: 3 (3-0-0)
Course Description: Theories of communication law and policy as they relate to the field of media systems, organizations and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 577  Communication Ethics and Values  Credits: 3 (3-0-0)
Course Description: Theories of communication ethics and values as they relate to the field of media systems, organizations and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 578  Communication and Social Change  Credits: 3 (3-0-0)
Course Description: Theories of communication and social change as they relate to the field of media systems, organizations and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 579  Communication and Technology  Credits: 3 (3-0-0)
Course Description: Theories of communication and technology as they relate to the field of media systems, organizations and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 601  Cognitive Communication Theory  Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to cognitive and social cognitive processing.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 602  Social and Cultural Communication Theory  Credits: 3 (3-0-0)
Course Description: Theories of information technology and communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 603  Health Communication  Credits: 3 (3-0-0)
Course Description: Theories of health communication as they relate to the field of media systems, organizations, and culture.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 604  Communication and Innovation  Credits: 3 (3-0-0)
Course Description: Communication's role in the process of innovation as well as the diffusion of new technologies, products, ideas, behaviors and attitudes.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 605  Communication and Innovation  Credits: 3 (3-0-0)
Course Description: Communication's role in the process of innovation as well as the diffusion of new technologies, products, ideas, behaviors and attitudes.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 606  Communication and Innovation  Credits: 3 (3-0-0)
Course Description: Communication's role in the process of innovation as well as the diffusion of new technologies, products, ideas, behaviors and attitudes.
Prerequisite: JTC 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 501 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
JTC 664 Quantitative Research in Communication Credits: 3 (3-0-0)
Course Description: Advanced quantitative research methods used in communication research.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 665 Qualitative Methods in Communication Research Credits: 3 (3-0-0)
Course Description: Techniques for collecting, interpreting, analyzing qualitative communication data.
Prerequisite: JTC 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: JTC 500 or written consent of graduate advisor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 670 Communication in the Social Processes of Risk Credits: 3 (0-0-3)
Course Description: Communication and psychological, sociological, and cultural factors shaping risk involving technology, health, environment, disasters, sustainability.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

JTC 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Philosophy, techniques, and approaches to teaching journalism skills courses, as supervised by faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 687 Internship Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 690 Workshop Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 698 Research Credits: 3 (0-0-3)
Course Description: Development of theoretical basis and methodology for thesis or research project.
Prerequisite: JTC 500 and JTC 501.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

JTC 701 Colloquium in Communication and IT Credit: 1 (1-0-0)
Course Description: Orientation to graduate studies; communication theories, processes, media, and technology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Course may be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

JTC 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Prerequisite</th>
<th>Registration Information</th>
<th>Terms Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
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<td>Workshop</td>
<td>Var[1-18] (0-0-0)</td>
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<td>Fall, Spring</td>
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<td>JTC 792A</td>
<td>Seminar: Health and Risk</td>
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<td>Fall, Spring</td>
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<td>JTC 792B</td>
<td>Seminar: Human Computer Interaction</td>
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<td>Fall, Spring</td>
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<td>JTC 792C</td>
<td>Seminar: Communication Technology in</td>
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<td>Fall, Spring</td>
<td>Instructor Option</td>
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<td>JTC 792D</td>
<td>Seminar: Ethics, Law, and Policy</td>
<td>3</td>
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<td>JTC 792E</td>
<td>Seminar: Strategic Communication</td>
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<td>JTC 792F</td>
<td>Seminar: Media Technology and Society</td>
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<td>Fall, Spring</td>
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<td>JTC 793A</td>
<td>Seminar: Experimental Design</td>
<td>3</td>
<td>JTC 500</td>
<td>none</td>
<td>Fall, Spring</td>
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<td>JTC 793B</td>
<td>Seminar: Survey Design</td>
<td>3</td>
<td>none</td>
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<td>Fall, Spring</td>
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<td>JTC 793C</td>
<td>Seminar: Content Analysis</td>
<td>3</td>
<td>none</td>
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<td>Fall, Spring</td>
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<td>JTC 793D</td>
<td>Seminar: Qualitative Methods</td>
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<td>JTC 793E</td>
<td>Seminar: Human Factors</td>
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<td>JTC 793F</td>
<td>Seminar: Critical and Cultural Methods</td>
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<td>JTC 795</td>
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<td>JTC 798</td>
<td>Research</td>
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<td>Fall, Spring, Summer</td>
<td>Instructor Option</td>
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Key Academic Community-KEY (KEY)

Courses

KEY 162  Bridging the Biol/Chem Gulf for Pre-Health Majors  Credits: 2 (2-0-0)
Also Offered As: LIFE 162.
Course Description: Connections between chemistry and biology through inquiry-based exercises centered around societal and health issues.
Prerequisite: None.
Restriction: .
Registration Information: Enrollment in the KEY Health Professions Learning Community required. Credit not allowed for both KEY 162 and LIFE 162.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

KEY 192A Key Community Seminar  Credit: 1 (0-0-1)
Course Description: Examination of an intellectual problem or theme.
Topics vary by instructor.
Prerequisite: None.
Registration Information: Concurrent registration in companion courses in the Key Course Cluster.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

KEY 192B Key Community Seminar  Credits: 2 (0-0-2)
Course Description: Examination of an intellectual problem or theme.
Topics vary by instructor.
Prerequisite: None.
Registration Information: Concurrent registration in companion courses in the Key Course Cluster.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

KEY 192C Key Community Seminar  Credits: 3 (0-0-3)
Course Description: Examination of an intellectual problem or theme.
Topics vary by instructor.
Prerequisite: None.
Registration Information: Concurrent registration in companion courses in the Key Course Cluster.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

KEY 263  Academic and Career Decision-Making  Credit: 1 (0-0-1)
Course Description: Enhance academic and career development and decision making through self-authorship, critical thinking, and reflection.
Prerequisite: None.
Registration Information: Participation in the Key Plus Learning Community.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

KEY 272  Leadership--Higher Education Environment  Credit: 1 (0-0-1)
Course Description: Personal leadership and diversity theories.
Prerequisite: None.
Registration Information: Participation in the Key Plus Learning Community.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

KEY 484  Supervised College Teaching  Credits: Var[1-2] (0-0-0)
Course Description: Develop expertise in facilitating seminar discussions, promoting effective learning strategies, and encouraging academic success with students enrolled in a Key Community Seminar.
Prerequisite: None.
Registration Information: Junior standing. May be taken up to three times for credit. Students must be selected as Mentors for the Key Communities to serve as a Key Seminar Teaching Assistant. Written consent of Key Community Director to register for the course.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Landscape Architecture-LAND (LAND)

Courses

LAND 110  Introduction to Landscape Architecture  Credits: 3 (1-2-1)
Course Description: Introductory theories, methods, and applications of landscape studies.
Prerequisite: None.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 120  History of the Designed Landscape  Credits: 3 (3-0-0)
Course Description: Major monuments and spaces from ancient Middle East through classical antiquity, the Renaissance, and Western tradition.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 200  Topics in Landscape Theory and Garden Design  Credits: 3 (3-0-0)
Course Description: Landscape theory and design principles in garden design. Students will be engaged through online discussions and will record weekly exercises and course material with the development of a sketchbook and blog/website postings.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
LAND 220 Fundamentals of Ecology (GT-SC2) Credits: 3 (3-0-0)
Also Offered As: LIFE 220.
Course Description: Interrelationships among organisms and their environments.
Prerequisite: (BIO 100 to 199 - at least 3 credits or BZ 100 to 199 - at least 3 credits or LIFE 100 to 199 - at least 3 credits or HORT 100 to 199 - at least 3 credits) and (MATH 100 to 199 - at least 3 credits).
Registration Information: Credit allowed for only one of the following: LAND 220/LIFE 220, or LIFE 320. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

LAND 230 Drawing the Landscape Credits: 4 (2-4-0)
Course Description: Visual communication techniques; exploration of symbology, model building, design development drawing, and construction documentation draughting.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 240 Fundamentals of Landscape Design Process Credits: 4 (1-4-1)
Course Description: Initiation of formal exploration of design elements, materials, and principles, and introduction of design process as a defensible methodology.
Prerequisite: LAND 230.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 241 Environmental Analysis Credits: 3 (1-4-0)
Course Description: Exploration and understanding of natural and cultural landscapes through analytical simulation techniques.
Prerequisite: LAND 230.
Registration Information: Must have concurrent registration in LAND 240. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 357 Omnibus Field Studies Credits: 4 (0-8-0)
Course Description: Theories and methods for the analysis, design, and planning of garden and landscape scale environments.
Prerequisite: None.
Registration Information: 3 credits in landscape drawing and analysis.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 360 Basic Landscape Design and Construction Credits: 3 (0-6-0)
Course Description: Site programming analysis, design, and construction, including skill development in specifying earthwork, drainage, and vegetative composition.
Prerequisite: LAND 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 361 Digital Methods Credits: 3 (2-2-0)
Course Description: Landscape research, analysis, and design with ARCVIEW, AutoCAD, Microstation, and Photoshop.
Prerequisite: LAND 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 362 Form and Expression in Garden Design Credits: 3 (0-6-0)
Course Description: Formal decision making for site scale environments, including creative processes for form-giving, and generation of experimental solutions.
Prerequisite: LAND 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 363 Advanced Landscape Site Engineering Credits: 4 (2-4-0)
Course Description: Understanding and documenting the built environment with emphasis on construction and surveying as integral parts of design process.
Prerequisite: LAND 360.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 364 Design and Nature Credits: 4 (1-6-0)
Course Description: Computer-aided processes for siting, organizing, and evaluating cultural activities within ecologically fragile, landscape-scale environments.
Prerequisite: LAND 361.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 365 Landscape Contract Drawing and Specifications Credits: 3 (2-2-0)
Course Description: Construction details, design development, and construction documentation emphasizing implementation of design projects.
Prerequisite: LAND 363.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 366 Landscape Design Expression Credits: 4 (0-8-0)
Course Description: Idea, values, and process landscape form applied to interactions of natural, cultural systems at the site and community scale; design competitions.
Prerequisite: LAND 365.
Registration Information: Credit not allowed for both LAND 366 and LAND 376.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
LAND 368 Landscape Irrigation and Water Conservation  Credits: 3 (2-2-0)
Also Offered As: HORT 368.
Course Description: Practical approaches and methods of irrigation, water conservation, and water management in the designed landscape.
Prerequisite: LAND 110 or HORT 100.
Registration Information: Credit not allowed for both LAND 368 and HORT 367 or HORT 368. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 376 Landscape Design and Visualization  Credits: 4 (0-8-0)
Course Description: Precedents, ideas, values and processes of landscape form applied to landscape systems at the site and community scale; design competitions.
Prerequisite: LAND 362.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 384 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 392 Seminar-Designed Landscapes-Theory and Criticism  Credits: 2 (0-0-2)
Course Description: Readings, discussions, and writing in landscape architectural design theory; critical analysis of the designed and constructed landscape.
Prerequisite: LAND 365.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 444 Ecology of Landscapes  Credits: 3 (3-0-0)
Course Description: Theories, methods, and practices for interpreting, describing, and representing natural and human modified landscapes.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 446 Urban Design  Credits: 4 (0-8-0)
Course Description: Designing the urban landscape, including precedent exploration about overall image, materials, and structure of the city and its components.
Prerequisite: LAND 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 447 Comprehensive Landscape Design  Credits: 4 (0-8-0)
Course Description: Terminal studio; research, analysis, and synthesis for comprehensive project identified by student and approved in advance by faculty committee.
Prerequisite: LAND 446.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 449 Professional Practice  Credit: 1 (0-0-0)
Course Description: Theory and skills of landscape architectural professional practice including functional, human, business, legal, and political aspects.
Prerequisite: LAND 447, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 454 Landscape Field Studies  Credits: 5 (1-6-1)
Course Description: Field observation of spatial and temporal landscape patterns resulting from natural and cultural processes and interactions.
Prerequisite: LAND 366.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 455 Travel Abroad-European Landscape Architecture  Credits: 5 (1-6-1)
Course Description: Exploration of major theoretical platforms in design through drawing, photographing, and measuring landscape architecture precedents in Europe.
Prerequisite: LAND 362.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 495A Independent Study: Design Projects  Credits: Var[1-4] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 495B Independent Study: Field Service  Credits: Var[1-4] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LAND 496 Group Study  Credits: Var[1-8] (0-0-0)
Course Description: None.
Registration Information: Maximum of 8 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LAND 510  Virtual Design Methods  Credits: 3 (2-2-0)
Course Description: Exploration and application of advanced computing technology and methods for analyzing and organizing natural and cultural landscapes.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 520  Geographic Information Systems  Credits: 3 (1-4-0)
Course Description: Theories and applications of geographic information systems in spatial analysis and land planning.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 560  Structure of Landscape Patterns  Credits: 3 (2-2-0)
Course Description: Mechanisms and concepts in landscape structure for planning, design, and environmental management.
Prerequisite: LIFE 320.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 560  Structure of Landscape Patterns  Credits: 3 (2-2-0)
Course Description: Mechanisms and concepts in landscape structure for planning, design, and environmental management.
Prerequisite: LIFE 320.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 610  Topics in Garden Design  Credits: 4 (2-6-0)
Course Description: Garden design theories, methods, and operations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

LAND 670  Landscape Architecture Studio Option  Credits: 4 (1-6-1)
Course Description: Ideas, values, and processes of landscape architectural studio practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 695A  Landscape Architectural Independent Study: Design Projects Credits: Var[1-4] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Course may be taken up to 5 times for credit. Must register for lecture, laboratory, and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 695B  Landscape Architectural Independent Study: Field Service Credits: Var[1-4] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LAND 698  Research Credits: Var[1-5] (0-0-0)
Course Description: Guided research experience in landscape architecture.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Language-Amer Sign Lang-LSGN (LSGN)

Courses
LSGN 109  American Sign Language I Credits: 5 (5-0-0)
Course Description: Vocabulary, grammar and basic conversational skill in ASL, with information on deaf culture.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
LSGN 110  American Sign Language II  Credits: 5 (5-0-0)
Course Description: Development of communicative competence in ASL skill and expansion of knowledge of deaf culture.
Prerequisite: LSGN 109.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LSGN 200  Second-Year American Sign Language I  Credits: 3 (3-0-0)
Course Description: Building intermediate-low level speed/accuracy through complex vocabulary, syntax, depicting verbs and classifiers, and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 110.
Registration Information: Field trips required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LSGN 201  Second-Year American Sign Language II  Credits: 3 (3-0-0)
Course Description: Building intermediate-mid level speed/accuracy through self-generated stories, analysis of ASL semantic structures and vital aspects of Deaf/ASL culture.
Prerequisite: LSGN 200.
Registration Information: Field trips required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B.

LARA 105  First-Year Arabic I  Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Arabic.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 107  First-Year Arabic II  Credits: 5 (5-0-0)
Course Description: Essentials of Arabic for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LARA 105.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 200  Second-Year Arabic I (GT-AH4)  Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 107.
Registration Information: Placement exam can substitute for LARA 107.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 201  Second-Year Arabic II (GT-AH4)  Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LARA 200.
Registration Information: Placement exam can substitute for LARA 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LARA 250  Arabic Language, Literature, Culture in Translation (GT-AH2)  Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the Arabic language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LARA 296  Group Study-Arabic  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LARA 300  Third Year Arabic  Credits: 3 (3-0-0)
Course Description: Develop reading and writing skills.
Prerequisite: LARA 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 301  Oral Communication - Arabic  Credits: 3 (3-0-0)
Course Description: In-depth study of Arabic to improve proficiency, emphasizing oral communication.
Prerequisite: LARA 201.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LARA 495  Independent Study-Arabic  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Three years of college-level Arabic.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Chinese-LCHI (LCHI)
Courses

LCHI 105 First-Year Chinese I  Credits: 5 (5-0-0)
Course Description: Essentials of Chinese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Chinese.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 107 First-Year Chinese II  Credits: 5 (5-0-0)
Course Description: Essentials of the Chinese language for the continuing student; aural comprehension, speaking, reading, writing.
Prerequisite: LCHI 105.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 200 Second-Year Chinese I (GT-AH4)  Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 107.
Registration Information: Placement exam can substitute for LCHI 107.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 201 Second-Year Chinese II (GT-AH4)  Credits: 5 (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LCHI 200.
Registration Information: Placement exam can substitute for LCHI 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LCHI 205 Intermediate Written Chinese  Credits: 3 (3-0-0)
Course Description: Development of fundamental language skills emphasizing writing and reading.
Prerequisite: LCHI 200.
Registration Information: Placement exam can substitute for LCHI 200.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LCHI 250 Chinese Language, Literature, Culture in Translation (GT-AH2)  Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Chinese literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LCHI 296 Group Study-Chinese  Credits: Var[1-5] (0-0-0)
Course Description: Group study in Chinese language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LCHI 304 Third-Year Chinese I  Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 201.
Registration Information: Placement exam can substitute for LCHI 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 305 Third-Year Chinese II  Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LCHI 304.
Registration Information: Placement exam can substitute for LCHI 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 309 Contemporary Chinese Literature and the Arts  Credits: 3 (3-0-0)
Course Description: Trends resulting from traditional Chinese and contemporary foreign influences in Chinese literature and the arts.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LCHI 365 Introduction to Chinese Cinema Studies  Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Chinese cinema. Taught in Chinese.
Prerequisite: LCHI 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LCHI 408 Chinese Calligraphy  Credit: 1 (1-0-0)
Course Description: History of Chinese calligraphy and basic Chinese calligraphy skills.
Prerequisite: LCHI 304.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LCHI 495 Independent Study-Chinese  Credits: Var[1-6] (0-0-0)
Course Description: Requires: Three years of college-level Chinese.
Prerequisite: None.
Registration Information: Required: Three years of college-level Chinese.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LCHI 496 Group Study-Chinese  Credits: Var[1-5] (0-0-0)
Course Description: Prerequisite: LCHI 335.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
Language-French-LFRE (LFRE)

Courses

LFRE 100  First-Year French I  Credits: 5 (3-0-2)
Course Description: Essentials of French for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in French. Credit allowed for one of the following: LFRE 100, LFRE 105, or LFRE 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 101  First-Year French II Credits: 5 (3-0-2)
Course Description: Essentials of French for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LFRE 100 or LFRE 105 or LFRE 106.
Registration Information: Placement exam or instructor placement can substitute for course prerequisites. Credit not allowed for both LFRE 101 and LFRE 107. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 106  First-Year French Review Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in French. Basic review of essential skills: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement required. Credit allowed for only one of the following: LFRE 100, LFRE 105, or LFRE 106.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 108  Intensive French I Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LFRE 105 with a minimum grade of A or LFRE 106 with a minimum grade of A.
Registration Information: Written consent from instructor or placement exam can substitute for course prerequisites.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 120  Reading for Proficiency-French Credits: 3 (3-0-0)
Course Description: Essentials of the French language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LFRE 120 not allowed if LFRE 101, LFRE 107, or LFRE 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 200  Second-Year French I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 107 or LFRE 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 201  Second-Year French II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in French conversation, reading, and writing.
Prerequisite: LFRE 200.
Registration Information: Placement exam can substitute for LFRE 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LFRE 208  Intensive French II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LFRE 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 250  French Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the French language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH2).

LFRE 296  Group Study-French Credits: Var[1-5] (0-0-0)
Course Description: Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 300  Reading and Writing for Communication-French Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary French writing.
Prerequisite: LFRE 201 or LFRE 208.
Registration Information: Placement exam can substitute for course prerequisites. Credit not allowed for both LFRE 300 and LFRE 301.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LFRE 301 Oral Communication-French  Credits: 3 (3-0-0)
Course Description: In-depth French language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LFRE 201.
Registration Information: Placement exam can substitute for LFRE 201.
Credit not allowed for both LFRE 301 and LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 310 Approaches to French Literature  Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in French prose, drama, and poetry.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 312 Introduction to French Linguistics  Credits: 3 (3-0-0)
Course Description: French linguistics, phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LFRE 300, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 313 Introduction to French Translation and Interpreting  Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 326 French Phonetics  Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LFRE 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 335 Issues in French/Francophone Culture  Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of French-speaking countries.
Prerequisite: LFRE 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 345 Business French  Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the French language and culture.
Prerequisite: LFRE 300.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 355 20th Century French Literature  Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LFRE 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 365 Introduction to French Cinema Studies  Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to French and Francophone cinema. Taught in French.
Prerequisite: LFRE 310 or LFRE 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 400 Advanced French Communication Skills  Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LFRE 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 413 Advanced French Translation and Interpreting  Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from French.
Prerequisite: LFRE 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433A Advanced French/Francophone Culture: Representations  Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 433B Advanced French/Francophone Culture: Center and Margins  Credits: 3 (3-0-0)
Course Description: French and Francophone cultural identities and their history.
Prerequisite: LFRE 300 and LFRE 301 to 399.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 441 Advanced Business French  Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the French language and culture.
Prerequisite: LFRE 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 450 Selected French Literary Movements and Periods  Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of France such as classicism, realism, naturalism, existentialism.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LFRE 452 Genre Studies in French Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 453 Author Studies in French Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 454 Topic Studies in French Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topoi, and interdisciplinary subjects in literature.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 460 French/ Francophone Women Writers Credits: 3 (3-0-0)
Course Description: Selected French and Francophone women writers in a variety of genres emphasizing relationships among gender, culture, and writing.
Prerequisite: (LFRE 300) and (LFRE 310).
Registration Information: May be taken up to 3 times for credit.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 470 French Grammatical Constructions Credits: 3 (3-0-0)
Course Description: Linguistic analysis of selected French grammatical constructions (word order, word formation and sentence structure), their relationship to meaning.
Prerequisite: LFRE 312.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 492 Seminar-French Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.
Prerequisite: (LFRE 310) and (LFRE 400% to 479% - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 495 Independent Study-French Credits: Var[1-6] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Three years of college-level French.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LFRE 500 Language Analysis/Stylistics-French Credits: 3 (3-0-0)
Course Description: Analysis of language structure through the examination of style in literary and non-literary texts.
Prerequisite: LFRE 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 508 Intensive French-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of French for the teacher, developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 514 Issues in Teaching French Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 525 History of the French Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the language.
Prerequisite: LFRE 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 536 Topics in French Linguistics Credits: 3 (3-0-0)
Course Description: Acquisition, discourse analysis, and language change and variation over time and space.
Prerequisite: LFRE 500.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LFRE 551 Selected French Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LFRE 552 Advanced Studies in French Literary Genres Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in French.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LGEN 214 Second-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. 
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 215 Second-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. 
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 290 Theatre Workshop in a Foreign Language Credits: Var[1-3] (0-0-0)
Course Description: Application of communication skills in a foreign language through informal staging of dramatic scripts.
Prerequisite: LARA 105 or LCHI 105 or LFRE 105 or LGER 105 or LITA 105 or LJPN 105 or LKOR 105 or LRUS 105 or LSPA 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 296 Group Study-General Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGEN 314 Third-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. 
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 315 Third-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. 
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 365 Introduction to Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to foreign cinema. Taught in English.
Prerequisite: LCHI 305 or LFRE 310 or LFRE 335 or LGER 310 or LGER 335 or LJPN 305 or LRUS 305 or LSPA 310 or LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**Language-General-LGEN (LGEN)**

Courses

LGEN 114 First-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. 
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 115 First-Year Language II Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers. 
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 192 Modern Languages/Cultures: Italian and Japanese Credits: 3 (0-0-3)
Course Description: Language, cultural issues, and historical heritage of modern Italian and Japanese societies.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LGEN 382 Italian Ethnic Identity, Culture, and Gender Credits: 3 (2-0-1)
Also Offered As: ETST 382.
Course Description: Must register for lecture and recitation.
Prerequisite: None.
Registration Information: Different ethnic identities in southern and northern Italy. Historical and contemporary culture and feminism. Enhancement of linguistic skills.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 414 Fourth-Year Language I Credits: Var[1-10] (0-0-0)
Course Description: Critical language immersion courses taught abroad by members of the Council of American Overseas Research Centers.
Prerequisite: None.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LGEN 450 Research Methods Credit: 1 (1-0-0)
Course Description: Resources and reference tools appropriate to research in foreign languages and literatures.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: Advisor-approved position at a professional off-campus training program with international connections.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 492 Language, Literature, and Society-General Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature and society.
Prerequisite: (LFRE 310 or LGER 310 or LSPA 310) and (LFRE 400 to 481 - at least 2 courses or LGER 400 to 481 - at least 2 courses or LSPA 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 505 Methods/Technologies in Language Instruction Credits: 2 (2-1-0)
Course Description: Theory and methodology of teaching foreign languages and cultures, including video and computer-assisted technology.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 510 Research Methods Credit: 1 (1-0-0)
Course Description: Resources and reference tools appropriate to research in foreign languages and literatures.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGEN 516 Theory/Methods-Foreign Language Instruction Credits: 3 (3-0-0)
Course Description: Foreign language teaching methodology.
Prerequisite: None.
Registration Information: Admission to graduate studies in foreign language.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGEN 530 Literary and Cultural Theory Credits: 3 (3-0-0)
Course Description: Theoretical approaches to contemporary literary and cultural criticism.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
LG 535 Graduate Studies in Civilization Credits: 3 (3-0-0)
Course Description: Critical and analytical approaches to a foreign civilization and culture. Research related to language of specialization.
Prerequisite: LFRE 433A or LFRE 433B or LGER 434 or LSPA 436 or LSPA 437.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG 545 Literary Translation Theory and Practice Credits: Var[1-3] (0-0-0)
Course Description: Theory and practice of translating literary texts from foreign language to comparable English.
Prerequisite: None.
Registration Information: Reading knowledge of a foreign language required.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Supervised college teaching in foreign languages.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LG 694 Independent Study: Portfolio Credits: Var[1-6] (0-0-0)
Course Description: Independent study in foreign languages.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 699 Thesis Credits: Var[1-6] (0-0-0)
Course Description: Thesis in foreign languages.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-German-LGER (LGER)

Courses

LG 100 First-Year German I Credits: 5 (3-0-2)
Course Description: Essentials of German for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in German. Credit not allowed for both LGER 100 and LGER 105. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 101 First-Year German II Credits: 5 (3-0-2)
Course Description: Essentials of German for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LG 100 or LGER 105.
Registration Information: Must register for lecture and recitation. Placement exam can substitute for LGER 100. Credit not allowed for both LGER 101 and LGER 107. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 108 Intensive German I Credits: 5 (5-0-0)
Course Description: Accelerated practice in German speaking, reading, writing, and aural comprehension.
Prerequisite: LGER 105 with a minimum grade of A.
Registration Information: Written consent of instructor or placement exam can substitute for LGER 105 prerequisite.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 120 Reading for Proficiency-German Credits: 3 (3-0-0)
Course Description: Essentials of the German language for developing reading proficiency.
Prerequisite: None.
Registration Information: Credit for LG 120 not allowed if LGER 101, LGER 107, or LGER 108 has been completed.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 200 Second-Year German I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in German conversation, reading, and writing.
Prerequisite: LGER 107 or LGER 108.
Registration Information: Placement exam can substitute for course prerequisites. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LG 201 Second-Year German II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LGER 200.
Registration Information: Placement exam can substitute for LGER 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LG 208 Intensive German II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LG 108.
Registration Information: Placement exam can substitute for LG 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LG250 German Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of the German language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Literature & Humanities (GT-AH2).

LG296 Group Study-German Credits: Var[1-5] (0-0-0)
Course Description: Group study in German language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LG300 Reading and Writing for Communication-German Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LGER 201 or LGER 208.
Registration Information: Placement exam can substitute for course prerequisites.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG301 Oral Communication-German Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LGER 201.
Registration Information: Placement exam can substitute for LGER 201. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG300 Reading and Writing for Communication-German Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LGER 201 or LGER 208.
Registration Information: Placement exam can substitute for course prerequisites.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG310 Approaches to German Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG313 Introduction to German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from German.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG326 German Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to language sound system; intensive practice in pronunciation, intonation.
Prerequisite: LGER 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG335 Issues in German Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of German-speaking countries.
Prerequisite: LGER 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG336 Issues in Swiss and Austrian Culture Credits: 3 (3-0-0)
Course Description: Swiss and Austrian culture focusing on the development of their respective cultures from the medieval to the modern periods. Taught in German.
Prerequisite: LGER 300.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LG345 Business German Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the German language and culture.
Prerequisite: LGER 300.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG355 20th Century German Literature Credits: 3 (3-0-0)
Course Description: Representative literary works from the 20th century.
Prerequisite: LGER 310.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG365 Introduction to German Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to German cinema. Taught in German.
Prerequisite: LGER 310 or LGER 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG400 Advanced German Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LGER 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LG401 Advanced German Oral Communication Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in German language skills, with an emphasis on oral communication.
Prerequisite: LGER 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LG413 Advanced German Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the German.
Prerequisite: LGER 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LG 434 Advanced German Culture Credits: 3 (3-0-0)
Course Description: Critical examination of selected topics in culture and cultural history of German-speaking countries.
Prerequisite: LG 335 or LG 336.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LG 441 Advanced Business German Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the German language and culture.
Prerequisite: LG 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG 450 Selected German Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Germany, such as classicism, realism, naturalism, existentialism.
Prerequisite: LG 300 and LG 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 451 Seminar-German Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society emphasizing relationships between texts and the society of their origin.
Prerequisite: (LG 310) and (LG 400 to 481 - at least 2 courses).
Registration Information: Senior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG 452 Genre Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: LG 300 and LG 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 453 Author Studies in German Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: LG 300 and LG 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 454 Topical Studies in German Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topics, and interdisciplinary subjects in literature.
Prerequisite: LG 300 and LG 310.
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 465 Advanced Studies in German Film Credits: 3 (3-0-0)
Course Description: Representation of German society and culture through film. Taught in German.
Prerequisite: LG 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LG 466 Advanced Studies in German Film Credits: 3 (3-0-0)
Course Description: Representation of German society and culture through film. Taught in German.
Prerequisite: LG 365.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LG 500 Language Analysis/Stylistics-German Credits: 3 (3-0-0)
Course Description: Analysis of German structure through the examination of style in literary and non-literary texts.
Prerequisite: LG 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 508 Intensive German-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of German for the teacher, developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 514 Issues in Teaching German Credit: 1 (1-0-0)
Course Description: Current theory and practice in second-language instruction; technological applications.
Prerequisite: None.
Registration Information: Concurrent graduate teaching assistantship required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LG 525 History of the German Language Credits: 3 (3-0-0)
Course Description: Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of German.
Prerequisite: LG 400.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LG 551 Selected German Literary Movements/Periods Credits: 3 (3-0-0)
Course Description: Advanced studies in and critical approaches to selected literary movements or periods.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LGGR 552  Advanced Studies in German Literary Genres  Credits: 3 (3-0-0)
Course Description: Advanced studies and critical approaches to literary genres through study of major works in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGGR 553  Advanced German Author Studies  Credits: 3 (3-0-0)
Course Description: Critical approaches to the study of selected authors through appreciation and analysis of their major works.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LGGR 554  Advanced German Topic Studies  Credits: 3 (3-0-0)
Course Description: Selected topics (theme, topoi, and interdisciplinary subjects) in foreign literatures.
Prerequisite: None.
Registration Information: Undergraduate degree in German.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LGGR 692  Seminar-German  Credits: 3 (0-0-3)
Course Description: Treatment of selected topics in seminar.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Undergraduate degree in German.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LGGR 695  Independent Study-German  Credits: Var[1-6] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Greek-LGRK (LGRK)

Courses
LGGR 152  Classical Greek I  Credits: 3 (3-0-0)
Course Description: Essentials of the Greek language, reading, and translation.
Prerequisite: None.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LGGR 153  Classical Greek II  Credits: 3 (3-0-0)
Course Description: Essentials of the Greek language, reading, and translation.
Prerequisite: LGGR 152.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Language-Italian-LITA (LITA)

Courses
LITA 105  First-Year Italian I  Credits: 5 (5-0-0)
Course Description: Essentials of Italian for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Italian.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LITA 107  First-Year Italian II  Credits: 5 (5-0-0)
Course Description: Essentials of Italian for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LITA 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LITA 200  Second-Year Italian I (GT–AH4)  Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in Italian conversation, reading, and writing.
Prerequisite: LITA 107.
Registration Information: Placement exam can substitute for LITA 107.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LITA 201  Second-Year Italian II (GT–AH4)  Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LITA 200.
Registration Information: Placement exam can substitute for LITA 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LITA 296  Group Study-Italian  Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LITA 365  Studies in Foreign Film-Italian  Credits: 3 (3-0-0)
Course Description: Representation of Italian society through film. Taught in Italian.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LITA 495 Independent Study-Italian  Credits: Var[1-6]  (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of Italian at college level.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Japanese-LJPN (LJPN)

Courses
LJPN 105 First-Year Japanese I  Credits: 5  (5-0-0)
Course Description: Essentials of Japanese for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Japanese. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 107 First-Year Japanese II  Credits: 5  (5-0-0)
Course Description: Essentials of Japanese for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LJPN 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 200 Second-Year Japanese I (GT-AH4)  Credits: 5  (5-0-0)
Course Description: Grammar review and extensive practice in Japanese conversation, reading, and writing.
Prerequisite: LJPN 107.
Registration Information: Placement exam can substitute for LJPN 107. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 201 Second-Year Japanese II (GT-AH4)  Credits: 5  (5-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LJPN 200.
Registration Information: Placement exam can substitute for LJPN 200. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).

LJPN 208 Kanji Study  Credit: 1  (1-0-0)
Course Description: Kanji (Chinese characters) learning strategies, through examination and analysis of Kanji characters.
Prerequisite: LJPN 105.
Registration Information: May be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 296 Group Study-Japanese  Credits: Var[1-5]  (0-0-0)
Course Description: Group study in Japanese language/literature/culture.
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 298 Group Study-Japanese  Credits: Var[1-5]  (0-0-0)
Course Description: Group study in Japanese language/literature/culture.
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 304 Third-Year Japanese I Credits: 3  (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LJPN 201.
Registration Information: Placement exam can substitute for LJPN 201. Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 305 Third-Year Japanese II Credits: 3  (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LJPN 304.
Registration Information: Placement exam can substitute for LJPN 304. Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LJPN 365 Introduction to Japanese Cinema Studies Credits: 3  (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Japanese cinema. Taught in Japanese.
Prerequisite: LJPN 305.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 366 Historical Aspects of the Language and Society Credits: 3  (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities.
Prerequisite: LJPN 305.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 404 Historical Aspects of the Language and Society Credits: 3  (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities.
Prerequisite: LJPN 305.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

LJPN 405 Integrated Japanese: Beyond Words Credits: 3  (3-0-0)
Course Description: Advanced Japanese language course designed to further enhance proficiency through a variety of activities for the continuing student.
Prerequisite: LJPN 305.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
LJPN 408 Advanced Kanji Study Credit: 1 (1-0-0)
Course Description: Kanji learning strategies and acquisition of advanced Kanji characters.
Prerequisite: LJPN 201.
Registration Information: May be taken up to 4 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LJPN 495 Independent Study-Japanese Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Japanese.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Korean-LKOR (LKOR)

Courses
LKOR 105 First-Year Korean I Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Korean.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 107 First-Year Korean II Credits: 5 (5-0-0)
Course Description: Essentials of Korean for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LKOR 105.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 202 Intermediate Korean and Culture I Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 107.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LKOR 203 Intermediate Korean and Culture II Credits: 3 (3-0-0)
Course Description:
Prerequisite: LKOR 202.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

Language-Latin-LLAT (LLAT)

Courses
LLAT 105 First Year Latin I Credits: 5 (5-0-0)
Course Description: Essentials of Latin grammar, vocabulary, and phonology.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LLAT 107 First-Year Latin II Credits: 5 (5-0-0)
Course Description: Six tenses of verbs, active and passive; use subjunctive review of the five declensions of nouns and adjectives; new vocabulary.
Prerequisite: LLAT 105.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LLAT 296 Group Study-Latin Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Language-Russian-LRUS (LRUS)

Courses
LRUS 105 First-Year Russian I Credits: 5 (5-0-0)
Course Description: Essentials of the Russian for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: No previous study in Russian.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 107 First-Year Russian II Credits: 5 (5-0-0)
Course Description: Essentials of Russian for the continuing student: aural comprehension, speaking, reading, writing.
Prerequisite: LRUS 105.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 200 Second-Year Russian I (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 107.
Registration Information: Placement exam can substitute for LRUS 107.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, World Languages (GT-AH4).
LRUS 201 Second-Year Russian II (GT-AH4) Credits: 4 (4-0-0)
Course Description: Grammar review and extensive practice in Russian conversation, reading, and writing.
Prerequisite: LRUS 200.
Registration Information: Placement exam can substitute for LRUS 200.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: None.

LRUS 250 Russian Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Russian language, literature, and culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: None.

LRUS 296 Group Study--Russian Credits: Var[1-5] (0-0-0)
Course Description: Group study in Russian language/literature/culture.
Prerequisite: LRUS 100 to 499 between 3 and 5 credits - at least 3 credits.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 304 Third-Year Russian I Credits: 3 (3-0-0)
Course Description: Development of reading comprehension, communicative competence, and cultural understanding.
Prerequisite: LRUS 201.
Registration Information: Placement exam can substitute for LRUS 201.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 305 Third-Year Russian II Credits: 3 (3-0-0)
Course Description: Enhanced development of reading comprehension, communicative competence, and cultural sensitivity.
Prerequisite: LRUS 304.
Registration Information: Placement exam can substitute for LRUS 304.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LRUS 350 Russian Culture Credits: 3 (3-0-0)
Course Description: Russian culture and its development through literature, as well as geography, history, and music.
Prerequisite: LRUS 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 365 Introduction to Russian Cinema Studies Credits: 3 (3-0-0)
Course Description: Terminology, techniques, and approaches specific to Russian cinema. Taught in Russian.
Prerequisite: LRUS 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LRUS 495 Independent Study-Russian Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Must have completed three years of college-level Russian.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LRUS 496 Group Study-Russian Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: LRUS 305.
Registration Information: Placement exam can substitute for LRUS 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Language-Spanish-LSPA (LSPA)

LSPA 100 First-Year Spanish I Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the beginner: aural comprehension, speaking, reading, writing.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. No previous study in Spanish. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 101 First-Year Spanish II Credits: 5 (3-0-2)
Course Description: Essentials of Spanish for the continuing student: aural comprehension, speaking, reading, and writing.
Prerequisite: LSPA 100 or LSPA 105 or LSPA 106.
Registration Information: Must register for lecture and recitation. Placement exam or instructor placement can substitute for course prerequisites. Credit not allowed for both LSPA 101 and LSPA 107. Sections offered as Mixed Face-to-Face (3 credits face-to-face, 2 credits online) or Face-to-Face only.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 106 First-Year Spanish Review Credits: 3 (3-0-0)
Course Description: For students with minimal proficiency in Spanish. Basic review of essential skills: aural comprehension, speaking, reading, and writing.
Prerequisite: None.
Registration Information: Placement exam or instructor placement. Credit allowed for only one of the following: LSPA 100, LSPA 105, or LSPA 106. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 108 Intensive Spanish I Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LSPA 105 with a minimum grade of A or LSPA 106 with a minimum grade of A.
Registration Information: Written consent of instructor or placement exam can substitute for course prerequisites.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 200 Second-Year Spanish I (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in Spanish conversation, reading, and writing.
Prerequisite: LSPA 107 or LSPA 108.
Registration Information: Placement exam can substitute for course prerequisites.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 201 Second-Year Spanish II (GT-AH4) Credits: 3 (3-0-0)
Course Description: Grammar review and extensive practice in conversation, reading, and writing.
Prerequisite: LSPA 200.
Registration Information: Placement exam can substitute for LSPA 200. Credit not allowed for both LSPA 201 and LSPA 228B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 208 Intensive Spanish II Credits: 5 (5-0-0)
Course Description: Accelerated practice in speaking, reading, writing, and aural comprehension.
Prerequisite: LSPA 108.
Registration Information: Placement exam can substitute for LSPA 108.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

LSPA 230 Spanish for Heritage Speakers Credits: 3 (3-0-0)
Course Description: Expands vocabulary, oral communication, writing and reading skills, as well as the contents and contexts of communication in Spanish.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 107, or LSPA 108 has been completed.

LSPA 201 or LSPA 230.

LSPA 108.

LSPA 105 with a minimum grade of A or LSPA 106 with a minimum grade of A.

LSPA 303 Oral Communication-Spanish Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.

LSPA 304 Approaches to Spanish Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LSPA 300.

LSPA 305 Introduction to Spanish Linguistics Credits: 3 (3-0-0)
Course Description: Phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LSPA 300, may be taken concurrently.

LSPA 306 Introduction to Spanish Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 300.

LSPA 296 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.

LSPA 297 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.

LSPA 298 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.

LSPA 300 Reading and Writing for Communication-Spanish Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LSPA 201 or LSPA 230.
Registration Information: Placement exam can substitute for LSPA 201. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 205 Spanish Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Spanish literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 206 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.

LSPA 301 Reading and Writing for Communication-Spanish Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.

LSPA 302 Approaches to Spanish Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LSPA 300.

LSPA 303 Oral Communication-Spanish Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.

LSPA 304 Approaches to Spanish Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LSPA 300.

LSPA 305 Introduction to Spanish Linguistics Credits: 3 (3-0-0)
Course Description: Phonetics, phonology, morphology, syntax, semantics, and pragmatics.
Prerequisite: LSPA 300, may be taken concurrently.

LSPA 306 Introduction to Spanish Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 300.

LSPA 307 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.

LSPA 308 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.

LSPA 205 Spanish Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Spanish literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Arts & Humanities 3B.

LSPA 250 Spanish Language, Literature, Culture in Translation (GT-AH2) Credits: 3 (3-0-0)
Course Description: Selected works in translation from different periods and genres which represent the interrelationship of Spanish literature and culture.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 296 Group Study-Spanish Credits: Var[1-5] (0-0-0)
Course Description: Group study in language/literature/culture.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LSPA 300 Reading and Writing for Communication-Spanish Credits: 3 (3-0-0)
Course Description: Development of reading and writing proficiency through an in-depth examination of contemporary writing.
Prerequisite: LSPA 201 or LSPA 230.
Registration Information: Placement exam can substitute for LSPA 201. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LSPA 301 Oral Communication-Spanish Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.

LSPA 302 Approaches to Spanish Literature Credits: 3 (3-0-0)
Course Description: Appreciation and critical readings of representative works in prose, drama, and poetry.
Prerequisite: LSPA 300.

LSPA 303 Oral Communication-Spanish Credits: 3 (3-0-0)
Course Description: In-depth language study to improve proficiency in all language skills emphasizing oral.
Prerequisite: LSPA 201.
LSPA 326  Spanish Phonetics Credits: 3 (3-0-0)
Course Description: Phonetic principles and their application to Spanish sound system; intensive practice in pronunciation, intonation.
Prerequisite: LSPA 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 335  Issues in Hispanic Culture Credits: 3 (3-0-0)
Course Description: Historical context of contemporary issues in the culture of Spanish-speaking countries.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 345  Business Spanish Credits: 3 (3-0-0)
Course Description: Business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 346  Spanish for Health Care Credits: 3 (3-0-0)
Course Description: Specific linguistic and cultural issues necessary to function in the Hispanic health care world.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 365  Introduction to Spanish Cinema Credits: 3 (3-0-0)
Course Description: Representation of Spanish society through film.
Taught in Spanish.
Prerequisite: LSPA 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 379  Service Learning-Spanish Credit: 1 (0-2-0)
Course Description: Language-related voluntary community work.
Prerequisite: None.
Registration Information: Concurrent registration with 300-level Spanish course. Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
LSPA 400  Advanced Spanish Communication Skills Credits: 3 (3-0-0)
Course Description: Development of speaking, reading, and writing proficiency through an in-depth examination of representative writings and media communications.
Prerequisite: LSPA 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 401  Advanced Spanish Oral Communication Credits: 3 (3-0-0)
Course Description: Advanced language study to improve proficiency in Spanish language skills, with an emphasis on oral communication.
Prerequisite: LSPA 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 413  Advanced Spanish Translation and Interpreting Credits: 3 (3-0-0)
Course Description: Advanced practice in translation and interpreting of written and oral texts into and from the Spanish language.
Prerequisite: LSPA 313.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 435  Caribbean Culture in Hispanic Literature Credits: 3 (3-0-0)
Course Description: Hispanic-Caribbean cultures with emphasis on African heritage and cultural identity.
Prerequisite: LSPA 335.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 436  Advanced Latin American Culture Credits: 3 (3-0-0)
Course Description: Latin American cultural identities and their history.
Prerequisite: LSPA 335.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 441  Advanced Business Spanish Credits: 3 (3-0-0)
Course Description: Advanced business and commercial aspects of the Spanish language and culture.
Prerequisite: LSPA 345.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 442  Colonial Latin American Literature Credits: 3 (3-0-0)
Course Description: Literature and literary culture of colonial Latin America. Readings and essays are in Spanish.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 443  Spanish Theatre Credits: 3 (3-0-0)
Course Description: Major authors and works of Spanish theatre.
Prerequisite: (LSPA 300) and (LSPA 310).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 445  Women Writers in the Hispanic World Credits: 3 (3-0-0)
Course Description: Selected Hispanic women writers in a variety of genres emphasizing relationships among gender, culture, and writing.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 449 Spanish-American Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spanish America such as classicism, realism, naturalism, and existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 450 Selected Spanish Literary Movements and Periods Credits: 3 (3-0-0)
Course Description: Studies in selected literary movements and periods of Spain, such as classicism, realism, naturalism, and existentialism.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 452 Genre Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to major works in literature through selected literary genres and subgenres.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 453 Author Studies in Spanish Credits: 3 (3-0-0)
Course Description: Development of critical approaches to authors through the appreciation and analysis of selected works.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 454 Topic Studies in Spanish Credits: 3 (3-0-0)
Course Description: Selected topic studies such as themes, topoi, and interdisciplinary studies in literature.
Prerequisite: (LSPA 300) and (LSPA 310).
Registration Information: May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 465A Studies in Foreign Film: Spain Credits: 3 (3-0-0)
Course Description: Representation of Spanish society or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 465B Studies in Foreign Film: Latin America Credits: 3 (3-0-0)
Course Description: Representation of Latin American societies or specific topics through film. Taught in Spanish.
Prerequisite: LSPA 310 and LSPA 335.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 468 Spanish Vocabulary and Word Formation Credits: 3 (3-0-0)
Course Description: Spanish vocabulary: meaning relations, word formation through prefixation, suffixation, and composition, and meaning change over time and space.
Prerequisite: LSPA 312.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 470 Spanish Grammatical Constructions Credits: 3 (3-0-0)
Course Description: Linguistic analysis of selected Spanish grammatical constructions (word order, word formation, and sentence structure), their relationship to meaning.
Prerequisite: LSPA 400.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 479 Service Learning-Spanish Credit: 1 (0-2-0)
Course Description: Language-related voluntary community work. Written consent of the instructor of the 400-level Spanish course required. May be taken up to 3 times for credit.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
LSPA 492 Seminar-Spanish Language, Literature, and Society Credits: 3 (0-0-3)
Course Description: Integrative study of language, literature, and society.
Prerequisite: None.
Registration Information: Concurrent registration with 400-level Spanish course. Written consent of the instructor of the 400-level Spanish course required. May be taken up to 3 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LSPA 495 Independent Study-Spanish Credits: Var[1-6] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Three years of college-level Spanish.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
LSPA 500 Language Analysis/Stylistics-Spanish Credits: 3 (3-0-0)
Course Description: Analysis of Spanish structure through the examination of style in literary and non-literary texts.
Prerequisite: LSPA 400.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 508 Intensive Spanish-Graduate Review Credits: 4 (3-3-0)
Course Description: Immersion review of Spanish for the teacher; developing intermediate-level proficiency in culture and the four skills.
Prerequisite: None.
Registration Information: Admission to Summer Institute for Foreign Language Teaching. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
LSPA 514 Issues in Teaching Spanish  Credit: 1 (1-0-0)  
**Course Description:** Current theory and practice in second-language instruction; technological applications.  
**Prerequisite:** None.  
**Registration Information:** Concurrent graduate teaching assistantship required.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

LSPA 525 History of the Spanish Language  Credit: 3 (3-0-0)  
**Course Description:** Investigation of both internal (strictly linguistic) and external (sociolinguistic) factors in development of the Spanish language.  
**Prerequisite:** LSPA 400.  
**Term Offered:** Spring.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.

LSPA 536 Topics in Spanish Linguistics  Credit: 3 (3-0-0)  
**Course Description:** Acquisition, discourse analysis, and language change and variation over time and space.  
**Prerequisite:** LSPA 500.  
**Terms Offered:** Fall, Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

LSPA 549 Literary Periods of Spanish America  Credit: 3 (3-0-0)  
**Course Description:** Advanced studies in critical approaches to selected literary movements or periods of Spanish America.  
**Prerequisite:** None.  
**Registration Information:** Undergraduate degree in Spanish.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.

LSPA 551 Selected Spanish Literary Movements/Periods  Credit: 3 (3-0-0)  
**Course Description:** Advanced studies in and critical approaches to selected literary movements or periods.  
**Prerequisite:** None.  
**Registration Information:** Undergraduate degree in Spanish.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.

LSPA 552 Advanced Studies in Spanish Literary Genres  Credit: 3 (3-0-0)  
**Course Description:** Advanced studies in and critical approaches to literary genres through study of major works in foreign literatures.  
**Prerequisite:** None.  
**Registration Information:** Undergraduate degree in Spanish.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.

LSPA 553 Advanced Spanish Author Studies  Credit: 3 (3-0-0)  
**Course Description:** Critical approaches to the study of selected authors through appreciation and analysis of their major works.  
**Prerequisite:** None.  
**Registration Information:** Undergraduate degree in Spanish.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

LSPA 554 Advanced Topic Studies-Spanish  Credit: 3 (3-0-0)  
**Course Description:** Selected topics (theme, topoi, and interdisciplinary subjects) in Spanish literature.  
**Prerequisite:** None.  
**Registration Information:** Undergraduate degree in Spanish.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

LSPA 555 Independent Study-Spanish  Credit: Var[1-6] (0-0-0)  
**Course Description:** Treatment of selected topics in seminar.  
**Prerequisite:** None.  
**Restriction:** Must be a: Graduate, Professional.  
**Registration Information:** Undergraduate degree in Spanish.  
**Terms Offered:** Fall, Spring, Summer.  
**Grade Mode:** Instructor Option.  
**Special Course Fee:** No.

LEAP 200 Advocacy in the Visual and Performing Arts  Credit: 3 (0-0-3)  
**Course Description:** The importance of the role of advocacy for the arts, issues of censorship, public funding, arts education, and artists' advocacy through the arts.  
**Prerequisite:** None.  
**Registration Information:** Music, Theatre, Dance or Art majors only.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

LEAP 220 Technology and the Arts in the 21st Century  Credit: 3 (2-2-0)  
**Course Description:** Utilizing technology to better serve arts creation, arts marketing and promotion.  
**Prerequisite:** LEAP 200.  
**Registration Information:** Music, Theatre, Dance or Art majors only.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

LEAP 300 Arts Outreach and Community Engagement  Credit: 3 (3-0-0)  
**Course Description:** Research, development and production of arts outreach projects; team projects for community engagement.  
**Prerequisite:** LEAP 220.  
**Registration Information:** Required field trips.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.
LEAP 310 Creating and Managing a Career in the Arts  Credits: 3 (3-0-0)
Course Description: Training artists to create careers as entrepreneurs through self-promotion, career development, media, networking, and fiscal awareness/understanding.
Prerequisite: LEAP 300.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 310 South Africa: Arts Community Collaboration  Credits: 3 (1-4-1)
Course Description: Research, development and production of international arts outreach projects; team project for community engagement.
Prerequisite: None.
Registration Information: Sophomore standing.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 487 Internship Credits: Var[2-12] (0-0-0)
Course Description: In-field internship.
Prerequisite: None.
Registration Information: Must have concurrent registration in LEAP 492. Enrollment in LEAP minor, Music, Theatre, Dance or Art major; junior or senior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 492 Internship Seminar Credit: 1 (0-0-1)
Course Description: Integration of and reflection on Field internship and workplace opportunities.
Prerequisite: LEAP 310.
Registration Information: Must have concurrent registration in LEAP 487. Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 495 Independent Study in Arts Leadership Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

LEAP 500 Leadership in the Arts Credits: 3 (3-0-0)
Course Description: Theoretical and applied knowledge about concepts of leadership, leadership styles as applied to arts-related organizations.
Prerequisite: None.
Registration Information: Senior or graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 600 Arts Policy and Advocacy Credits: 3 (0-0-3)
Course Description: Discussion of the role of artist as citizen and how we affect public policy.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Admission to the Master of Arts Leadership and Administration program. Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 650 Arts Events Management Credits: 3 (3-0-0)
Course Description: Technical aspects of events, season and festival management for arts-related organizations.
Prerequisite: LEAP 500, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 687 Internship Credits: Var[2-12] (0-0-0)
Course Description: Field internship at local, regional or national arts organization (45 hours per credit).
Prerequisite: LEAP 500 and LEAP 692, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LEAP 692 Internship Seminar Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: LEAP 600.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
LEAP 695 Independent Study in Arts Leadership Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: LEAP 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: A maximum of 6 credits allowed. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Liberal Arts-LB (LB)

Courses
LB 170 World Literatures to 1500 (GT-AH2) Credits: 3 (3-0-0)
Course Description: Culturally significant literary texts from the beginnings of writing to 1500 from Europe, Asia, and Africa.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Literature & Humanities (GT-AH2).

LB 171 World Literatures-The Modern Period (GT-AH2) Credits: 3 (3-0-0)
Course Description: Culturally significant literary texts from 1500 to the present from Europe, Asia, Africa, the Americas.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Literature & Humanities (GT-AH2).

LB 192 College of Liberal Arts First-Year Seminar Credits: 3 (0-0-3)
Course Description: Traditions, concepts, and topics integral to the liberal arts; cultivates reading, communication, and critical thinking.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

LB 193 Concepts/Critical Thinking in Liberal Arts Credit: 1 (0-0-1)
Course Description: Concepts and success strategies essential to the Liberal Arts. Students create a comprehensive academic plan.
Prerequisite: None.
Registration Information: Declared majors within the College of Liberal Arts. Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

LB 200 Liberal Arts Research Methods Credit: 1 (1-0-0)
Course Description: Research methods for the liberal arts, evaluation of sources, various style manuals (MLA/APA), essay format, note cards, and selected reference works.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

LB 205 Contemporary Legal Studies Credits: 3 (3-0-0)
Course Description: Introduction to sources and contemporary principles of law in the United States and to the study and practice of law.
Prerequisite: None.
Registration Information: Required field trips.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 300 Specialized Professional Writing Credits: 3 (2-0-1)
Course Description: Emphasizes specialized writing skills used in professional letters, resumes, manuals, critiques, complaints, and interest-specific research projects.
Prerequisite: CO 150 or HONR 193.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

LB 386A Practicum: CTV Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386B Practicum: KCSU Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386C Practicum: Collegian Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386D Practicum: College Avenue Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386E Practicum: Arts Production Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

LB 386F Practicum—Sports Production Credits: Var[1-3] (0-0-0)
Course Description: Practicum in producing for various sporting events.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
**Library Information-LI (LI)**

**Courses**

**LI 301 Research in the Information Age** Credit: 1 (1-0-0)
Course Description: Developing strategies for library research; locating appropriate resources; and selecting, evaluating, and recording relevant information.
Prerequisite: None.
Restriction: Must be a Senior, Senior - 5yr Bachelor, Senior - PostBachelor, Senior - Second Bachelor.
Registration Information: Junior standing. Must register for lecture and laboratory. Credit not allowed for both SPCM 455 and LB 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**LB 495 Independent Study** Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

**Library Information-LI (LI)**

**Courses**

**LIFE 102 Attributes of Living Systems (GT-SC1)** Credits: 4 (3-3-0)
Course Description: Levels of organization, stability, and change in living systems.
Prerequisite: None.
Registration Information: Must have taken high school chemistry.
Must register for lecture and laboratory. Intended for students requiring additional courses in biology or areas related to biological science.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

**LIFE 162 Bridging the Biol/Chem Gulf for Pre-Health Majors** Credits: 2 (2-0-0)
Also Offered As: KEY 162.
Course Description: Connections between chemistry and biology through inquiry-based exercises centered around societal and health issues.
Prerequisite: None.
Registration Information: Enrollment in the KEY Health Professions Learning Community. Credit not allowed for both LIFE 162 and KEY 162.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
LIFE 201 Introductory Genetics: Applied/Population/Conservation/ Ecological (GT-SC2) Credits: 3 (3-0-0)
Course Description: Introduction to genetics, with emphasis on applied 
genetics, population genetics, and conservation/ecological genetics.
Prerequisite: LIFE 102.
Registration Information: Credit not allowed for both LIFE 201A and LIFE 201B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: (CHEM 107 or CHEM 111) and (LIFE 102 or BZ 110 and BZ 111).
LIFE 201A Introductory Genetics: Molecular/Immunological/ Developmental (GT-SC2) Credits: 3 (3-0-0)
Course Description: Introduction to genetics, with emphasis on applied 
genetics, population genetics, and conservation/ecological genetics.
Prerequisite: LIFE 102.
Registration Information: Credit not allowed for both LIFE 201A and LIFE 201B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).
LIFE 201B Introductory Genetics Recitation: Applied/Population/ Conservation/Ecological Credit: 1 (0-0-1)
Course Description: Case-studies and problem solving in applied 
genetics, population genetics, and conservation/ecological genetics.
Prerequisite: LIFE 201A, may be taken concurrently.
Registration Information: Credit not allowed for both LIFE 202A and LIFE 202B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LIFE 202 Introductory Genetics Recitation: Molecular Credit: 1 (0-0-1)
Course Description: Case studies and problem-solving in molecular 
genetics.
Prerequisite: LIFE 201B, may be taken concurrently.
Registration Information: Participation in University Honors program. Credit not allowed for both LIFE 202B and LIFE 202A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LIFE 203 Introductory Genetics Laboratory Credits: 2 (0-3-1)
Course Description: Basic molecular genetics and molecular aspects of development laboratory.
Prerequisite: LIFE 201A, may be taken concurrently or LIFE 201B, may be taken concurrently.
Registration Information: Must register for lecture and recitation. Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
LIFE 205 Microbial Biology Credits: 3 (3-0-0)
Course Description: General principles of microbiology focused on human-microbial interactions.
Prerequisite: (CHEM 107 or CHEM 111) and (LIFE 102 or BZ 110 and BZ 111).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LIFE 206 Microbial Biology Laboratory Credits: 2 (0-4-0)
Course Description: 
Prerequisite: LIFE 205, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LIFE 210 Introductory Eukaryotic Cell Biology Credits: 3 (3-0-0)
Course Description: Solid understanding of a cell, different cell types, molecular aspects of cellular and subcellular biology and biochemistry. 
Prerequisite: CHEM 111 and CHEM 112 and LIFE 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LIFE 211 Introductory Cell Biology Honors Recitation Credit: 1 (0-0-1)
Course Description: Molecular aspects of cellular and subcellular biology and introductory biochemistry recitation.
Prerequisite: LIFE 210, may be taken concurrently.
Registration Information: Participation in University Honors program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
LIFE 212 Introductory Cell Biology Laboratory Credits: 2 (0-3-1)
Course Description: Molecular aspects of cellular and subcellular biology and introductory biochemistry laboratory.
Prerequisite: CHEM 112, may be taken concurrently and LIFE 210, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
LIFE 220 Fundamentals of Ecology (GT-SC2) Credits: 3 (3-0-0)
Also Offered As: LAND 220.
Course Description: Interrelationships among organisms and their environments. (GT-SC2, AUCC 3A).
Prerequisite: (BIO 100 to 199 or BZ 100 to 199 or LIFE 100 to 199 or HORT 100 and (MATH 100 to 199).
Registration Information: 3 credits of 100-level biology or HORT 100; 3 credits of 100-level MATH. Credit not allowed for more than one of the following: LIFE 220/LAND 220 or LIFE 320. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).
LIFE 320 Ecology Credits: 3 (3-0-0)
Course Description: Interrelationships among organisms and their environments using conceptual models and quantitative approaches.
Prerequisite: (BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for more than one of the following: LIFE 220/LAND 220 or LIFE 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Management Science-QNT (QNT)
Management-MGT (MGT)

Courses

QNT 270  Basic Business Statistics  Credits: 3 (2-2-0)
Course Description: Statistical tools applied to business conditions and functions.
Prerequisite: STAT 204.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

QNT 375  Models and Applications in Management Science  Credits: 3 (2-2-0)
Course Description: Introduction and application of operations research techniques to business decision problems.
Prerequisite: STAT 204.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

QNT 570  Statistical Decision Making  Credits: 3 (3-0-0)
Course Description: Classical statistical techniques including hypothesis testing and multiple regression; model building, control charts, time series and forecasting.
Prerequisite: QNT 270.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 301  Supply Chain Management  Credits: 3 (3-0-0)
Course Description: Concept of value-driven supply chains; design and management of effective supply chains; emphasis on current practice and recent trends.
Prerequisite: None.
Registration Information: Sophomore standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 305  Fundamentals of Management  Credits: 3 (3-0-0)
Course Description: Managerial process of planning, directing, and controlling inputs of an organization. Analysis, decision making, and survey of research literature.
Prerequisite: None.
Registration Information: Credit not allowed for both MGT 305 and MGT 320. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 310  Human Resource Management  Credits: 3 (3-0-0)
Course Description: Principles and practices of employee management including hiring, development, compensation, and employee relations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 305  Fundamentals of Management  Credits: 3 (3-0-0)
Course Description: Managerial process of planning, directing, and controlling inputs of an organization. Analysis, decision making, and survey of research literature.
Prerequisite: None.
Registration Information: Credit not allowed for both MGT 305 and MGT 320. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 310  Human Resource Management  Credits: 3 (3-0-0)
Course Description: Principles and practices of employee management including hiring, development, compensation, and employee relations.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 320  Contemporary Management Principles/Practices  Credits: 3 (3-0-0)
Course Description: Principles of management in combination with practices of the new economy to achieve managerial goals.
Prerequisite: (BUS 300) and (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both MGT 320 and MGT 305. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 325  Leadership Communication  Credits: 3 (3-0-0)
Course Description: Interpersonal communication for leaders and managers in organizational settings.
Prerequisite: BUS 200.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 330  Corporate Innovation and Entrepreneurship  Credits: 3 (3-0-0)
Course Description: Process of creating new ventures and generating innovations within existing organizations.
Prerequisite: ACT 210.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Business Administration, Mechanical Engineering, Agriculture Business, Apparel and Merchandising, Design and Merchandising, Apparel Design and Production, Biomedical Engineering, Computer Science majors; declared LEAP minors or LEAP graduate students only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 340  Fundamentals of Entrepreneurship  Credits: 3 (3-0-0)
Course Description: Concepts of entrepreneurship and role of entrepreneurs in the economy.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 350  Employment Relations: The Legal Environment  Credits: 3 (3-0-0)
Course Description: Legal principle and policy issues arising from the employment relationship.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 360  Social and Sustainable Venturing  Credits: 3 (3-0-0)
Course Description: Entrepreneurship and economic opportunities in the transition to a socially and ecologically sustainable global economy.
Prerequisite: None.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Junior standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MGT 374 Total Rewards and Performance Management Credits: 3 (3-0-0)
Course Description: Principles and best practices for the strategic design and implementation of compensation and performance management systems.
Prerequisite: MGT 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 375 Advanced Supply Management Credits: 3 (3-0-0)
Course Description: Advanced design of purchasing and supply management within global supply chains.
Prerequisite: MGT 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 376 Advanced Service and Manufacturing Operations Credits: 3 (3-0-0)
Course Description: Advanced concepts for the management of operations in service and manufacturing companies.
Prerequisite: MGT 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 377 Advanced Logistics Credits: 3 (3-0-0)
Course Description: Advanced design and management of logistics and distribution operations within global supply chains.
Prerequisite: MGT 301.
Registration Information: Junior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 382 Management in an International Context Credits: 3 (3-0-0)
Course Description: Fundamentals of management taught in an international context. Emphasis on global management topics.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 410 Leadership and Organizational Behavior Credits: 3 (3-0-0)
Course Description: Behavior of people and groups as members of organizations.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 411 Leading High Performance Teams Credits: 3 (3-0-0)
Course Description: Design, management, and leadership of teams in organizational settings.
Prerequisite: MGT 305 or MGT 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 420 New Venture Creation Credits: 3 (3-0-0)
Course Description: Entrepreneurs and the entrepreneurial process. Growth of an independent business.
Prerequisite: MGT 340.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 425 Organizational Communication Strategies Credits: 3 (3-0-0)
Course Description: Strategic communications in organizations; contribution that organizational members make whether acting as individual or group communicators.
Prerequisite: (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 430 Leadership and Social Responsibility Credits: 3 (3-0-0)
Course Description: Social responsiveness of managers as they face expectations in the firm’s internal and external environment.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 440 New Venture Management Credits: 3 (3-0-0)
Course Description: Theories and skills necessary for managing startup and existing small firms.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 450 Biomedical Entrepreneurship I Credits: 2 (2-0-0)
Course Description: Commercialization process for biomedical inventions; market and competitor analysis, regulations, patents; preliminary feasibility study.
Prerequisite: BIOM 470 or MGT 340 or MECH 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 468 Negotiating Globally Credits: 3 (3-0-0)
Course Description: Characteristics and process of negotiation in a global context.
Prerequisite: MGT 305 or MGT 320.
Registration Information: MGT 305 or MGT 320 or International Studies majors.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MGT 470 Managerial Decisions-Issues and Analysis Credits: 3 (3-0-0)
Course Description: Investigation and application of managerial decision-making processes and methods to solve problems in business functions.
Prerequisite: (MGT 301) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MGT 471 Micro Issues in Supply Chain Management Credits: 3 (3-0-0)
Course Description: Managing the supply function (locally or globally) and the productive flow of materials in goods and services-producing supply chains.
Prerequisite: MGT 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 472 Macro Issues in Supply Chain Management Credits: 3 (3-0-0)
Course Description: Application of analytical and computer-based tools in the analysis and improvement of supply chains with variable demand and supply.
Prerequisite: MGT 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 473 Employment Relations: Labor and Management Credits: 3 (3-0-0)
Course Description: Managerial decision making and action in labor-management relations as affected by labor legislation and administrative practices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 474 Human Resource Planning and Development Credits: 3 (3-0-0)
Course Description: Human resource planning, recruitment, selection, training, and development.
Prerequisite: MGT 310.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 475 International Business Management Credits: 3 (3-0-0)
Course Description: Multinational corporations: their scope, activities, managerial problems and decisions.
Prerequisite: (FIN 300 or FIN 305) and (MKT 300 or MKT 305) and (MGT 305 or MGT 320).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 476 Negotiation and Conflict Management Credits: 3 (3-0-0)
Course Description: Principles and practices of negotiation and conflict management including bargaining as a social and managerial activity.
Prerequisite: MGT 320 or MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 477 Global Supply Chain Management Credits: 3 (3-0-0)
Course Description: Principles and best practices for the strategic design and implementation of global supply chains.
Prerequisite: MGT 375 and MGT 376 or MGT 376 and MGT 377 or MGT 375 and MGT 377.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 482A Study Abroad: International New Venture Creation Credits: 3 (3-0-0)
Course Description: New venture creation taught in an international setting focusing on multi-country contexts. Emphasis on entrepreneurship and intrapreneurship in today's global environments.
Prerequisite: None.
Registration Information: Written consent of instructor. Completion of 60 credit hours.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 486 Practicum in Supply Chain Management Credits: 3 (1-4-0)
Course Description: Research and recommend solutions to "real world" supply chain management problems.
Prerequisite: MGT 375 or MGT 377.
Registration Information: Must register for lecture and laboratory. MGT 375; MGT 377 or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 487 Internship Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MGT 600 Manufacturing Process and Systems Design Credits: 3 (3-0-0)
Course Description: Strategic understanding of alternate manufacturing processes and systems design support needed to manage those processes.
Prerequisite: BUS 620 and BUS 625.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MGT 601 Enterprise Computing and Systems Integration  Credits: 3 (3-0-0)
Course Description: Integrated extended enterprise planning and
execution systems concepts including ERP, CRM, SCM, MRPII, business
processes, front/back office systems.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to M.B.A., M.C.I.S., M.S.B.A., or M.E.
program. Credit not allowed for both MGT 601 and CIS 601.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 610 Strategic Human Resource Management  Credits: 3 (3-0-0)
Course Description: Strategic issues associated with recruiting, staffing,
evaluating, compensating, and developing employees; leadership issues
associated therein.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to masters program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 611 Management of Organization Development  Credits: 3 (3-0-0)
Course Description: Methods for managing organizational change.
Prerequisite: MGT 305 or MGT 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 612 Managing in a Global Context  Credits: 3 (3-0-0)
Course Description: Global management and HR development issues/
practices. Cross-cultural issues in organization behavior, recruitment,
selection, training, compensation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 620 Management  Credits: 3 (3-0-0)
Course Description: Practices, policies, philosophies, and behavior.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 625 Managerial Communication Practices  Credits: 3 (3-0-0)
Course Description: Internal, external, and managerial communication.
Managerial speaking and writing skills enhancement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master’s program in business.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 640 Supply Chain Management Strategies  Credits: 2 (2-0-0)
Course Description: How to create an effective supply chain management
system to establish an efficient network for supplying final consumption.
Prerequisite: MGT 600.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 665 Supply Chain Development and Management  Credits: 2 (2-0-0)
Course Description: This course teaches the development and
management of the global supply chain that plans, sources, makes and
delivers an organization's products.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be
offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 666 Global Social Sustainable Entrepreneurship  Credits: 3 (3-0-0)
Course Description: Global challenges--poverty, environmental
degradation, public health, agriculture. Role of entrepreneurial
management in private and public sector.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be
offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 667 New Venture Development for Social Enterprise  Credits: 3 (3-0-0)
Course Description: Early stages of a new venture, including creation
of business plan. Additional study of social entrepreneurship and
sustainable business strategies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. Sections may be
offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MGT 668 Labor Management Relations  Credits: 3 (3-0-0)
Course Description: Collective bargaining process, administration of
contract, and impact of public policy on industrial relations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MKT 300 Marketing Credits: 3 (3-0-0)
Course Description: Market and buyer analysis, product and service development, pricing, promotion, advertising, selling, and distribution.
Prerequisite: (AREC 202 or ECON 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both MKT 300 and MKT 305.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 305 Fundamentals of Marketing Credits: 3 (3-0-0)
Course Description: Overview of marketing activities involved in provision of products and services to consumers, including target markets and managerial aspects.
Prerequisite: AREC 202 or ECON 101 or ECON 202.
Registration Information: Credit not allowed for both MKT 305 and MKT 300. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 307 Fundamentals of Sports Marketing Credits: 3 (3-0-0)
Course Description: General marketing and the application within sporting related contexts. Focuses on the nature and scope of marketing a sports franchise as well as marketing traditional products or services with the assistance of sports figures.
Prerequisite: None.
Registration Information: This is a partial semester course. Offered as an online course only. Sport Management Minors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 315 Marketing Communication Design Credits: 3 (3-0-0)
Course Description: Creating multiple kinds of marketing communications using graphic design software.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Business majors only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 320 Integrated Marketing Communications Credits: 3 (3-0-0)
Course Description: Principles and practices of managing promotional activities including advertising, sales promotion, and other major media.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 330 Business Customer Relationships Credits: 3 (3-0-0)
Course Description: Managing relationships with distribution channel intermediaries and business customers.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 360 Retailing Credits: 3 (3-0-0)
Also Offered As: DM 360.
Course Description: Retail markets, institutions, operations, and problems.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit not allowed for both MKT 360 and DM 360. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 361 Buyer Behavior Credits: 3 (3-0-0)
Course Description: Marketing analysis of buying behavior of individuals, households, businesses, and not-for-profit organizations.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 362 Professional Selling Credits: 3 (3-0-0)
Course Description: Persuasive personal communications in selling consumer and industrial products and services.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MKT 363 Sales Management Credits: 3 (3-0-0)
Course Description: Recruiting, selecting, training, compensating, motivating, supervising, and evaluating a sales force.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 364 Product Development and Management Credits: 3 (3-0-0)
Course Description: Consumer and industrial product development and management issues as an integral part of the marketing mix.
Prerequisite: MKT 300 or MKT 305.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 365 International Marketing Credits: 3 (3-0-0)
Course Description: Analysis of international markets and development of strategic and tactical options for marketing across national boundaries.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 366 Services Marketing Credits: 3 (3-0-0)
Course Description: Customer service issues and unique challenges involved in marketing and management of services operations.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 367 Sports Marketing Credits: 3 (3-0-0)
Course Description: The nature and scope of applying marketing strategy and tactics in the sports marketing environment.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Credit allowed for only one of the following: MKT 367, MKT 367A, MKT 367B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 370 Digital Marketing Credits: 3 (3-0-0)
Course Description: Introduction to digital marketing: the landscape and tactics needed to execute marketing strategy in an online, connected world.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 410 Marketing Research Credits: 3 (3-0-0)
Course Description: Role and methodology of research in business emphasizing selection of study's direction, collecting data, and choosing techniques for analyzing data.
Prerequisite: (MKT 300 or MKT 305) and (STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 440 Pricing and Financial Analysis in Marketing Credits: 3 (3-0-0)
Course Description: Financial analysis involved in addressing marketing problems; advanced study of pricing strategy and tactics.
Prerequisite: MKT 300 or MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 450 Marketing Analytics Credits: 3 (3-0-0)
Course Description: Analytic techniques used by marketers to transform data into decision-making information.
Prerequisite: MKT 410.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 479 Marketing Strategy and Management Credits: 3 (3-0-0)
Course Description: Marketing decisions involving integration of elements of the marketing mix.
Prerequisite: MKT 410.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 486 Marketing Practicum Credits: 3 (0-0-3)
Course Description: To give students the experience of working on a real marketing problem with a team at a sponsoring firm.
Prerequisite: MKT 300 or MKT 305.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 487 Internship Credits: 3 (0-0-9)
Course Description: None.
Registration Information: Written consent of instructor required.
Maximum of 3 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 492 Seminar Credits: 3 (0-0-3)
Course Description: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 495 Independent Study Credits: Var[1-5] (0-0-0)
Course Description: None.
Registration Information: 2.75 GPA or better.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MKT 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 600 Marketing Management and Strategy Credits: 3 (3-0-0)
Course Description: Processes of customer value creation and value capture; marketing strategy analysis.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to a master's program in business.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 601 Marketing for Social Sustainable Enterprises Credits: 3 (3-0-0)
Course Description: Customer and stakeholder value creation and capture. Marketing strategy with emphasis on social sustainable organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to GSSE Program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 610 Qualitative Marketing Research Methods Credit: 1 (1-0-0)
Course Description: Overview of qualitative research methods including focus groups, in-depth interviews, observations, and projective techniques.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 611 Quantitative Marketing Research Methods Credit: 1 (1-0-0)
Course Description: Overview of the field of business research, with a focus on quantitative research methods.
Prerequisite: BUS 601 and BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 621 Search Engine Marketing and Optimization Credit: 1 (1-0-0)
Course Description: Focuses on search engine optimization (SEO) and search engine marketing (SEM). Students will improve the visibility of webpage(s) in the “organic results” through a variety of SEO tactics. Use paid activities (using the Google AdWords platform) to drive traffic from the search engine results page. Emphasizes application of class frameworks and concepts.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate.
Registration Information: Admission to a master's program in business. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 661 Consumer Behavior Credit: 1 (1-0-0)
Course Description: Marketing analysis of buying behavior of individual consumers.
Prerequisite: BUS 655.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 662 Strategic Selling for Business Customers Credit: 1 (1-0-0)
Course Description: Examination of sales strategies, sales tactics and best practices in professional selling with a primary context in business selling.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 667 Services Marketing Management Credit: 1 (1-0-0)
Course Description: Fundamental concepts and strategies that differentiate the marketing of services from the marketing of tangible goods, including customer satisfaction.
Prerequisite: BUS 655.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MKT 692 Seminar Credits: 3 (0-0-3)
Course Description: Critical review and discussion of relevant marketing topics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MKT 695 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: 3.25 GPA or better.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Mathematics-MATH (MATH)

Courses
MATH 101 Math in the Social Sciences (GT-MA1) Credits: 3 (2-2-0)
Course Description: Voting theory, power indices, fair division, apportionment, circuits and trees, list processing, descriptive statistics, probability.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Additional Information: Mathematics 1B, Mathematics (GT-MA1).
MATH 105 Patterns of Phenomena (GT-MA1) Credits: 3 (2-0-1)
Course Description: Applications of mathematical ideas and mode of thought in the arts and humanities, focusing on classification, recognition.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 117 College Algebra in Context I (GT-MA1) Credit: 1 (1-0-0)
Course Description: Functions as mathematical models. Linear, quadratic, and polynomial functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: None.
Registration Information: Mathematics Placement Examination or Mathematics Challenge Exam required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 118 College Algebra in Context II (GT-MA1) Credit: 1 (1-0-0)
Course Description: Reciprocals of linear functions, rational functions, and power functions considered symbolically, graphically, numerically, and contextually.
Prerequisite: MATH 117, may be taken concurrently.
Registration Information: MATH 117 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 122 Theory for Introductory Programming Credit: 1 (0-0-1)
Also Offered As: CS 122.
Course Description: Set theory, definitions operations, Venn diagrams, power sets, propositional logic and proofs. Functions; loop invariants.
Prerequisite: MATH 118.
Registration Information: Must have concurrent registration in CS 161. Credit not allowed for both MATH 122 and CS 122. Credit not allowed for students who have completed CS 160. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 124 Logarithmic and Exponential Functions (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of exponential and logarithmic functions, properties of logarithmic functions, exponential and logarithmic equations, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: Required: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 125 Numerical Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Definition and graphs of trigonometric functions, laws of sines and cosines, solutions of right and oblique triangles, applications.
Prerequisite: MATH 118, may be taken concurrently.
Registration Information: MATH 118 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 126 Analytic Trigonometry (GT-MA1) Credit: 1 (1-0-0)
Course Description: Inverse trigonometric functions, trigonometric identities, solving trigonometric equations.
Prerequisite: MATH 125, may be taken concurrently.
Registration Information: MATH 125 or Mathematics Placement Examination or Mathematics Challenge Examination required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 141 Calculus in Management Sciences (GT-MA1) Credits: 3 (3-0-0)
Course Description: Analytic geometry, limits, equilibrium of supply and demand, differentiation, integration, applications of the derivative, integral.
Prerequisite: MATH 118.
Registration Information: Credit allowed for only one of the following courses: MATH 141, MATH 155 or MATH 160.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 151 Mathematical Algorithms in Matlab I Credit: 1 (0-2-0)
Course Description: Statements, expressions and variable assignments, scripts, control statements and logical statements. Newton's method, Simpson's rule, recursion.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 152 Mathematical Algorithms in Maple Credit: 1 (0-2-0)
Course Description: Iteration and recursion, control and logical statements, expressions, functions, data types, binary numbers, symbolic manipulation of terms.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 155 Calculus for Biological Scientists I (GT-MA1) Credits: 4 (4-0-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications in the biosciences.
Prerequisite: (MATH 124) and (MATH 125).
Registration Information: Credit allowed for only one of the following courses: MATH 141, MATH 155, or MATH 160. Programmable graphing calculator required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 157 One Year Calculus IA (GT-MA1) Credits: 3 (3-0-0)
Course Description: Algebra and trigonometry, study skills for calculus. Limits, continuity, differentiation of elementary functions with applications.
Prerequisite: (MATH 124, may be taken concurrently) and (MATH 126).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 158 Mathematical Algorithms in C Credit: 1 (0-2-0)
Also Offered As: CS 158.
Course Description: Compilers, expressions, variable types, control statements, pointers, logical statements, plotting, secant method, trapezoidal rule, recursion.
Prerequisite: MATH 151 and CS 156 and MATH 160.
Registration Information: Credit not allowed for both MATH 158 and CS 158.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 159 One Year Calculus IB (GT-MA1) Credits: 3 (3-0-0)
Course Description: Study skills for calculus. Differentiation and integration of elementary functions with applications. Conic section.
Prerequisite: MATH 157.
Registration Information: Credit allowed for only one of the following: MATH 141; MATH 155; MATH 159; MATH 160.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics (GT-MA1).

MATH 160 Calculus for Physical Scientists I (GT-MA1) Credits: 4 (3-2-0)
Course Description: Limits, continuity, differentiation, and integration of elementary functions with applications; conic sections.
Prerequisite: (MATH 124 with a minimum grade of B) and (MATH 126 with a minimum grade of B).
Registration Information: Written consent of department chair. Credit allowed for only one of the following courses: MATH 141, MATH 155, MATH 159 or MATH 160. Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 161 Calculus for Physical Scientists II (GT-MA1) Credits: 4 (3-2-0)
Course Description: Transcendental functions, integration techniques, polar coordinates, sequences and series, with mathematical software.
Prerequisite: (MATH 124) and (MATH 159 or MATH 160).
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).

MATH 192 First Year Seminar in Mathematical Sciences Credit: 1 (0-0-1)
Course Description: Introduction to the richness and variety of problems addressed by mathematical language and techniques; resources and available careers.
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 229 Matrices and Linear Equations Credits: 2 (2-0-0)
Course Description: Linear systems, matrix arithmetic, homogeneous coordinates, complex numbers, eigenvalues, eigenvectors, applications to discrete dynamical systems.
Prerequisite: MATH 141 or MATH 155 or MATH 160.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 230 Discrete Mathematics for Educators Credits: 3 (2-2-0)
Course Description: Voting theory, fair division, graph theory, linear programming, probability, teaching in small groups, proof techniques, mathematical technology.
Prerequisite: MATH 161 and EDUC 275, may be taken concurrently.
Registration Information: Credit not allowed for both MATH 230 and MATH 330.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 235 Introduction to Mathematical Reasoning Credits: 2 (2-0-0)
Course Description: Mathematical statements and proof techniques, induction, set theory, inequalities, number systems, functions.
Prerequisite: MATH 161 or MATH 271.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 255 Calculus for Biological Scientists II (GT-MA1) Credits: 4 (4-0-0)
Course Description: Derivatives and integrals of functions of several variables, differential and difference equations, matrices, applications in the biosciences.
Prerequisite: (MATH 126, may be taken concurrently) and (MATH 155).
Registration Information: Credit not allowed for both MATH 255 and MATH 261. Programmable graphing calculator required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Mathematics 1B, Mathematics (GT-MA1).
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
<th>Prerequisite</th>
<th>Registration Information</th>
<th>Terms Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 261</td>
<td>Calculus for Physical Scientists III</td>
<td>4 (4-0-0)</td>
<td>Course Description: Vector functions, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, Green's theorem.</td>
<td>Prerequisite: MATH 161.</td>
<td>Registration Information: Credit not allowed for both MATH 261 and MATH 255.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 271</td>
<td>Applied Mathematics for Chemists I</td>
<td>4 (4-0-0)</td>
<td>Course Description: Series and limits, Taylor series, complex variables, first- and second-order ordinary differential equations, matrices, linear transformations, determinants, and eigenvalues.</td>
<td>Prerequisite: MATH 155 or MATH 159 or MATH 160.</td>
<td>Term Offered: Fall. Grade Mode: Traditional. Special Course Fee: No.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 272</td>
<td>Applied Mathematics for Chemists II</td>
<td>4 (4-0-0)</td>
<td>Course Description: Vector fields, partial differentiation, cylindrical and spherical coordinates, multiple integrals, line integrals, the Wave and the Schrödinger equations, separation of variables method. Inner Product Spaces. Fourier Series.</td>
<td>Prerequisite: MATH 271. Term Offered: Spring. Grade Mode: Traditional. Special Course Fee: No.</td>
<td>MATH 255 or MATH 261. Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 340 and MATH 345.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option</td>
<td>Trad within Student Option</td>
</tr>
<tr>
<td>MATH 273</td>
<td>Advanced Calculus of One Variable</td>
<td>4 (4-0-0)</td>
<td>Course Description: Convergence of sequences, series: limits, continuity, differentiation, integration of one-variable functions; development of skills for proving theorems.</td>
<td>Prerequisite: MATH 161.</td>
<td>Terms Offered: Fall. Grade Mode: Traditional. Special Course Fee: No.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 301</td>
<td>Introduction to Combinatorial Theory</td>
<td>3 (3-0-0)</td>
<td>Course Description: Matrices, orthogonal Latin squares, designs, difference sets, sets, binomial coefficients, inclusion and exclusion, recurrence, Ramsey's theorem, SDRs.</td>
<td>Prerequisite: MATH 160. Term Offered: Fall. Grade Mode: Traditional. Special Course Fee: No.</td>
<td>MATH 155 or MATH 160.</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 317</td>
<td>Advanced Calculus of One Variable</td>
<td>4 (4-0-0)</td>
<td>Course Description: Convergence of sequences, series: limits, continuity, differentiation, integration of one-variable functions; development of skills for proving theorems.</td>
<td>Prerequisite: MATH 161.</td>
<td>Terms Offered: Fall, Spring, Summer. Grade Modes: S/U within Student Option, Trad within Student Option. Special Course Fee: No.</td>
<td>No.</td>
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<tr>
<td>MATH 321</td>
<td>Mathematical Modeling</td>
<td>3 (3-0-0)</td>
<td>Course Description: Problem formulation. Modeling, theoretical and empirical. Variable selection. Derivation and simulation of solutions. Model testing including prediction.</td>
<td>Prerequisite: (MATH 161, may be taken concurrently) and (MATH 229, may be taken concurrently or MATH 369, may be taken concurrently). Term Offered: Fall. Grade Mode: Traditional. Special Course Fee: No.</td>
<td>Must register for lecture and laboratory. Credit allowed for only one of the following: MATH 348, BZ 348, BZ 548.</td>
<td>Fall</td>
<td>Traditional</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 331</td>
<td>Introduction to Mathematical Modeling</td>
<td>3 (3-0-0)</td>
<td>Course Description: Partial differential equations, separation of variables, Fourier series and transforms, Laplace, heat and wave equations.</td>
<td>Prerequisite: MATH 340 or MATH 345.</td>
<td>Registration Information: Credit not allowed for both MATH 332 and MATH 530.</td>
<td>Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 332</td>
<td>Partial Differential Equations</td>
<td>3 (3-0-0)</td>
<td>Course Description: Partial differential equations, separation of variables, Fourier series and transforms, Laplace, heat and wave equations.</td>
<td>Prerequisite: MATH 340 or MATH 345.</td>
<td>Registration Information: Credit not allowed for both MATH 332 and MATH 530.</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
<td></td>
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<tr>
<td>MATH 340</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>4 (3-2-0)</td>
<td>Course Description: First and second order equations, series, Laplace transforms, linear algebra, eigenvalues, first order systems of equations, numerical techniques.</td>
<td>Prerequisite: MATH 255 or MATH 261.</td>
<td>Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 340 and MATH 345.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 345</td>
<td>Differential Equations</td>
<td>4 (3-2-0)</td>
<td>Course Description: First and second order equations, LaPlace transforms, first order systems of equations, numerical methods, applied linear algebra, linearization.</td>
<td>Prerequisite: (MATH 229 or MATH 369) and (MATH 255 or MATH 261). Registration Information: Must register for lecture and laboratory. Credit not allowed for both MATH 345 and MATH 340.</td>
<td>Must register for lecture and laboratory. Credit not allowed for both MATH 345 and MATH 340.</td>
<td>MATH 345 or MATH 340.</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
</tr>
<tr>
<td>MATH 348</td>
<td>Theory of Population and Evolutionary Ecology</td>
<td>4 (3-3-0)</td>
<td>Also Offered As: BZ 348. Course Description: Principles and methods for building, analyzing, and interpreting mathematical models of ecological and evolutionary problems in biology.</td>
<td>Prerequisite: MATH 155 or MATH 160. Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: MATH 348, BZ 348, BZ 548.</td>
<td>Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: MATH 348, BZ 348, BZ 548.</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 350</td>
<td>Mathematics of Information Security</td>
<td>3 (3-0-0)</td>
<td>Course Description: Codes, ciphers, Chinese remainder theorem, primality testing, public key ciphers, RSA, finite fields, discrete algorithms, AES encryption.</td>
<td>Prerequisite: (MATH 229 or MATH 369) and (MATH 161). Term Offered: Fall. Grade Mode: Traditional. Special Course Fee: No.</td>
<td>Must register for lecture and laboratory. Credit allowed for only one of the following: MATH 348, BZ 348, BZ 548.</td>
<td>Fall</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 360</td>
<td>Mathematics of Information Security</td>
<td>3 (3-0-0)</td>
<td>Course Description: Sets, integers, polynomials, real and complex numbers, groups, integral domains, and fields; development of skills for proving theorems.</td>
<td>Prerequisite: MATH 161 or MATH 271.</td>
<td>Terms Offered: Fall, Spring, Summer. Grade Modes: S/U within Student Option, Trad within Student Option. Special Course Fee: No.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
<tr>
<td>MATH 366</td>
<td>Introduction to Abstract Algebra</td>
<td>3 (3-0-0)</td>
<td>Course Description: Sets, integers, polynomials, real and complex numbers, groups, integral domains, and fields; development of skills for proving theorems.</td>
<td>Prerequisite: MATH 161 or MATH 271.</td>
<td>Terms Offered: Fall, Spring, Summer. Grade Modes: S/U within Student Option, Trad within Student Option. Special Course Fee: No.</td>
<td>Fall, Spring, Summer</td>
<td>S/U within Student Option, Trad within Student Option</td>
<td>No.</td>
</tr>
</tbody>
</table>
MATH 369  Linear Algebra I  Credits: 3 (3-0-0)
Course Description: Linear systems, matrices, subspaces of Euclidean spaces, linear transformations on Euclidean spaces, eigenvalues, eigenvectors.
Prerequisite: MATH 161 or MATH 255 or MATH 271.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 384  Supervised College Teaching  Credit: 1 (1-0-0)
Course Description: Skills for effective tutoring of precalculus mathematics; design and implementation of the Individualized Mathematics Program.
Prerequisite: None.
Registration Information: Written consent of instructor. May not be used to satisfy Mathematics degree requirements. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MATH 405  Introduction to Number Theory  Credits: 3 (3-0-0)
Course Description: Diophantine equations; distribution of primes; multiplicative functions; finite fields; quadratic reciprocity; quadratic number fields.
Prerequisite: MATH 360 or MATH 366.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 417  Advanced Calculus I  Credits: 3 (3-0-0)
Course Description: Topology of Euclidean spaces, limits, derivatives and integrals on Euclidean spaces. Implicit functions and the implicit function theorem.
Prerequisite: MATH 369 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 418  Advanced Calculus II  Credits: 3 (3-0-0)
Course Description: Line and surface integrals, series, sequences and series of functions.
Prerequisite: MATH 417.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 425  History of Mathematics  Credits: 3 (3-0-0)
Course Description: Historical development of geometry, arithmetic, algebra, and calculus from ancient times to 20th century.
Prerequisite: (EDUC 331) and (MATH 317 and MATH 366 or MATH 317 and MATH 369 or MATH 366 and MATH 369).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 430  Fourier and Wavelet Analysis with Apps  Credits: 3 (3-0-0)
Also Offered As: ECE 430.
Course Description: Fourier analysis and transforms, FFTs; sampling theorems, computational algorithms; wavelets; applications to communication, imaging, and compression.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Credit not allowed for both MATH 340 and ECE 340.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 445  Mathematics in Biology and Medicine  Credits: 3 (3-0-0)
Course Description: Models in population biology, cell division, host-parasoid systems, bacterial growth and predator-prey systems.
Prerequisite: BZ 348 or MATH 255 or MATH 340 or MATH 345 or MATH 348.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 450  Introduction to Numerical Analysis I  Credits: 3 (3-0-0)
Course Description: Solutions of systems of linear and nonlinear equations, interpolation, approximation.
Prerequisite: (CS 156 or CS 160 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 229 or MATH 369) and (MATH 340 or MATH 345).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 451  Introduction to Numerical Analysis II  Credits: 3 (3-0-0)
Course Description: Numerical computation of eigenvalues, numerical solution of ordinary and partial differential equations.
Prerequisite: (CS 156 or CS 160 or CS 163 or CS 164 or CS 253 or MATH 151) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 455  Information and Coding Theory  Credits: 3 (3-0-0)
Course Description: Entropy, mutual information, channel capacity, channel coding theorem, syndrome decoding, BCH codes, recent developments.
Prerequisite: MATH 360 and MATH 369 or MATH 366.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 460  Information and Coding Theory  Credits: 3 (3-0-0)
Course Description: Entropy, mutual information, channel capacity, channel coding theorem, syndrome decoding, BCH codes, recent developments.
Prerequisite: MATH 360 and MATH 369 or MATH 366.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 466  Abstract Algebra I  Credits: 3 (3-0-0)
Course Description: Comprehensive introduction to groups, rings, and fields.
Prerequisite: MATH 235 or MATH 360 or MATH 366.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 467 Abstract Algebra II Credits: 3 (3-0-0)
Course Description: Advanced topics in abstract algebra: Euclidean domains, abstract vector spaces, extension fields, Galois theory.
Prerequisite: MATH 466 and MATH 369, may be taken concurrently.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
MATH 469 Linear Algebra II Credits: 3 (3-0-0)
Course Description: Abstract vector spaces, general theory of linear transformations, theory of determinants, canonical forms.
Prerequisite: MATH 369.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 470 Euclidean and Non-Euclidean Geometry Credits: 3 (3-0-0)
Course Description: Topics from real Euclidean, affine metric and non-Euclidean geometries emphasizing methods and connections with other areas of mathematics.
Prerequisite: (MATH 229 or MATH 369) and (MATH 261).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
MATH 472 Introduction to Topology Credits: 3 (3-0-0)
Course Description: Topologies on sets, continuous functions, homeomorphisms. Sequences and convergence, metric spaces, compactness, countability axioms.
Prerequisite: MATH 317.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
MATH 474 Introduction to Differential Geometry Credits: 3 (3-0-0)
Course Description: Local and global geometry of curves and surfaces in Euclidean space, curvature, covariant differentiation, geodesics and the Gauss-Bonnet theorem.
Prerequisite: MATH 261 and MATH 369.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
MATH 476 Topics in Mathematics Credits: 3 (3-0-0)
Course Description: Study experiences which deal with established content areas in mathematics.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MATH 487 Internship Credits: Var[1-16] (0-0-0)
Course Description: A work-learn experience integrating classroom theory with practical experience.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MATH 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MATH 498 Undergraduate Research in Mathematics Credits: Var[1-3] (0-0-0)
Course Description: Research skills and techniques taught to suit student's level and interests. Includes both oral and written communication of results.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MATH 501 Combinatorics I Credits: 3 (3-0-0)
Course Description: Puzzles, numbers and counting, subsets, recurrence relations, generating functions, inversion, counting with symmetry, networks, matchings.
Prerequisite: (MATH 301) and (MATH 360 or MATH 366).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
MATH 502 Combinatorics II Credits: 3 (3-0-0)
Course Description: Graph algorithms, external set theory; partitions, Hadamard matrices, q-binomials, finite geometries, strongly regular graphs, triple systems, designs.
Prerequisite: MATH 501.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
MATH 505 Teaching Problem Solving in Mathematics K-12 Credits: 3 (0-0-3)
Course Description: Problem-solving strategies, cooperative learning, and manipulatives for K-12 classroom.
Prerequisite: None.
Registration Information: Offered as telecourse only. Teacher licensure required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 510 Linear Programming and Network Flows  Credits: 3 (3-0-0)
Course Description: Optimization methods; linear programming, simplex algorithm, duality, sensitivity analysis, minimal cost network flows, transportation problem.
Prerequisite: MATH 261 or MATH 315.
Registration Information: Credit not allowed for both MATH 510 and ENGR 510.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 517 Introduction to Real Analysis  Credits: 3 (3-0-0)
Course Description: Euclidean and metric spaces, compactness, continuity, sequences, series, multivariable differentiation, inverse and implicit function theorems.
Prerequisite: MATH 417 and MATH 369.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 519 Complex Variables I  Credits: 3 (3-0-0)
Course Description: Analytic functions, complex integration theory, singularities, elementary functions, and mapping.
Prerequisite: MATH 317.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 520 Nonlinear Programming  Credits: 3 (3-0-0)
Course Description: Theoretical, computational, practical aspects of nonlinear programming (NLP); unconstrained, constrained NLP; quadratic programming; large-scale NLP.
Prerequisite: MATH 510.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 525 Optimal Control  Credits: 3 (3-0-0)
Course Description: Theory and application of optimal control and optimal estimation theory; continuous and discrete time systems; Pontryagin maximum principle.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 530 Mathematics for Scientists and Engineers  Credits: 4 (4-0-0)
Course Description: Proof-oriented linear algebra, ordinary and partial differential equations.
Prerequisite: MATH 340 or MATH 345.
Registration Information: Primarily for students in the Mathematics Graduate Interdisciplinary Studies Program. Credit not allowed for both MATH 530 and MATH 332.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 532 Mathematical Modeling of Large Data Sets  Credits: 3 (3-0-0)
Course Description: Mathematical theory and algorithms for modeling large data sets. Application to real world problems. Emphasis on geometric ideas.
Prerequisite: MATH 369 or MATH 530.
Registration Information: Preparedness to do programming in a standard language required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 535 Foundations of Applied Mathematics  Credits: 3 (3-0-0)
Course Description: Calculus of variations, perturbation methods, models of continuum, dimensional analysis, stochastic models, integral equations, diffusion.
Prerequisite: MATH 340 or MATH 345.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 540 Dynamical Systems  Credits: 3 (3-0-0)
Course Description: Linear and nonlinear systems, orbits, phase space, flows of vector fields, stability, bifurcation theory, chaos, strange attractors and applications.
Prerequisite: MATH 369 and MATH 417.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 545 Partial Differential Equations I  Credits: 3 (3-0-0)
Course Description: Second order linear PDEs, elliptic and parabolic equations, equations of math physics, separation of variables, Fourier series.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 546 Partial Differential Equations II  Credits: 3 (3-0-0)
Course Description: Distribution theory, Green's functions, Sobolev spaces, elliptic and parabolic equations.
Prerequisite: MATH 545.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 550 Numerical Methods in Science and Engineering  Credits: 3 (3-0-0)
Also Offered As: ENGR 550.
Course Description: Finite elements, finite differences, spectral methods, method of lines, conservation laws; stability and convergence analysis for PDEs.
Prerequisite: MATH 340 or MATH 345 or MATH 530.
Registration Information: Credit not allowed for both MATH 550 and ENGR 550.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MATH 560 Linear Algebra Credits: 3 (3-0-0)
Course Description: Finite dimensional vector spaces, inner products, dual spaces, transformations, projections, adjoints, norms, eigenvalues, eigenvectors.
Prerequisite: MATH 369.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 561 Numerical Analysis I Credits: 4 (4-0-0)
Course Description: Numerical linear algebra, solving nonlinear systems, least squares, and minimization.
Prerequisite: (MATH 151 or CS 156 or CS 160 or CS 253) and (MATH 560).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 566 Introduction to Abstract Algebra I Credits: 3 (3-0-0)
Course Description: Analysis of algebraic structures including groups, rings, fields, and vector spaces.
Prerequisite: MATH 366.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 567 Introduction to Abstract Algebra II Credits: 3 (3-0-0)
Course Description: Field theory, Galois theory, and advanced linear algebra.
Prerequisite: MATH 566.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 560 Advanced Combinatorics I Credits: 3 (3-0-0)
Course Description: Special numbers, mobius inversions, transversals, partial orders, different sets, codes, t-designs.
Prerequisite: MATH 502 and MATH 566.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 602 Advanced Combinatorics II Credits: 3 (3-0-0)
Course Description: Hypergeometric functions, graph algorithms, hadamard matrices, strongly regular graphs, association schemes.
Prerequisite: MATH 601.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 605A Number Theory: Algebraic Number Theory Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605B Number Theory: Arithmetic Geometry Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 605C Number Theory: Elliptic Curves Credits: 3 (3-0-0)
Course Description:
Prerequisite: MATH 519, may be taken concurrently and MATH 566 and MATH 567, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 617 Integration and Measure Theory Credits: 4 (4-0-0)
Course Description: Riemann-Cauchy integration theory, sigma-algebras, Lebesgue theory of measure and integration, Fubini’s Theorem, Radon-Nikodym theorem, Lp spaces.
Prerequisite: MATH 517.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 618 Advanced Real Analysis Credits: 3 (3-0-0)
Course Description: Normed linear spaces, Banach and Hilbert spaces, elements of functional analysis.
Prerequisite: MATH 560 and MATH 617.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
MATH 619 Complex Variables II Credits: 3 (3-0-0)
Course Description: Infinite products, entire functions, analytic continuation, Riemann surfaces, other topics.
Prerequisite: MATH 519.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 620 Variational Methods and Optimization I Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, calculus of variations, applications.
Prerequisite: MATH 570 or MATH 517.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 621 Variational Methods and Optimization II Credits: 3 (3-0-0)
Course Description: Unconstrained and constrained infinite dimensional optimization, variational inequalities, Lagrange multipliers, control, applications.
Prerequisite: MATH 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 633 Industrial and Applied Mathematics Credits: 3 (2-2-0)
Course Description: Team solution of problems arising in industrial and applied mathematics. Problem formulation, solution proposal, implementation and analysis.
Prerequisite: MATH 530 or MATH 560 or MATH 561.
Restriction: Must be a: Graduate, Professional.
Registration Information: Preparedness to do programming in a standard language required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 640 Ordinary Differential Equations I Credits: 3 (3-0-0)
Course Description: Existence and uniqueness, continuation, continuous dependence, linear systems, and stability.
Prerequisite: (MATH 340 or MATH 345 or MATH 530) and (MATH 369 and MATH 517).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 641 Ordinary Differential Equations II Credits: 3 (3-0-0)
Course Description: Topics selected from nonlinear boundary value problems, periodic phenomena, differential operators, and others.
Prerequisite: MATH 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 645 Advanced Partial Differential Equations I Credits: 3 (3-0-0)
Course Description: Abstract methods for linear partial differential equations.
Prerequisite: MATH 546.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 646 Advanced Partial Differential Equations II Credits: 3 (3-0-0)
Course Description: Problems in nonlinear partial differential equations.
Prerequisite: MATH 645.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MATH 651 Numerical Analysis II Credits: 4 (4-0-0)
Course Description: Interpolation, approximation, quadrature, initial and boundary value problems.
Prerequisite: (CS 156 or CS 160 or CS 253 or MATH 151) and (MATH 340 or MATH 345 or MATH 369 or MATH 530).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MATH 666 Advanced Algebra I Credits: 3 (3-0-0)
Course Description: Theory of rings and algebras with applications.
Prerequisite: MATH 567.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 667 Advanced Algebra II Credits: 3 (3-0-0)
Course Description: Advanced topics from algebra: representation theory, Wedderburn theory, bilinear forms, multilinear and homological algebra.
Prerequisite: MATH 666.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MATH 670 Introduction to Differential Manifolds Credits: 3 (3-0-0)
Course Description: Finite-dimensional differential manifolds, submanifolds, vector fields and flows, Lie groups and algebras.
Prerequisite: MATH 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 672</td>
<td>Projective Geometry I</td>
<td>3</td>
<td>(3-0-0)</td>
<td>Course Description: Algebraic sets in projective space, the Nullstellensatz, rational maps and functions, coordinate rings, Hilbert functions, dimension, degree. Prerequisite: MATH 567. Restriction: Must be a: Graduate, Professional. Term Offered: Fall. Grade Mode: Traditional. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 673</td>
<td>Projective Geometry II</td>
<td>3</td>
<td>(3-0-0)</td>
<td>Course Description: Topics selected from curves and surfaces, sheaf theory, algebraic geometry, singularity theory, vector bundles. Prerequisite: MATH 672. Restriction: Must be a: Graduate, Professional. Term Offered: Spring. Grade Mode: Traditional. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 676</td>
<td>Topics in Mathematics</td>
<td>3</td>
<td>(3-0-0)</td>
<td>Course Description: Advanced study experiences which deal with established content areas in mathematics. Prerequisite: None. Restriction: Must be a: Graduate, Professional. Registration Information: May be taken up to 5 times for credit. Terms Offered: Fall, Spring, Summer. Grade Mode: Traditional. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 687</td>
<td>Internship</td>
<td>Var[1-9]</td>
<td>(0-0-0)</td>
<td>Course Description: A work-learn experience integrating classroom theory with practical experience. Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 693</td>
<td>Seminar in Mathematics</td>
<td>3</td>
<td>(0-0-3)</td>
<td>Course Description: Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 695</td>
<td>Independent Study</td>
<td>Var[1-18]</td>
<td>(0-0-0)</td>
<td>Course Description: Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 698</td>
<td>Research</td>
<td>Var[1-18]</td>
<td>(0-0-0)</td>
<td>Course Description: Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 699</td>
<td>Dissertation</td>
<td>Var[1-18]</td>
<td>(0-0-0)</td>
<td>Course Description: Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 717</td>
<td>Functional Analysis I</td>
<td>3</td>
<td>(3-0-0)</td>
<td>Course Description: Topological vector spaces; Banach and Hilbert spaces. Prerequisite: MATH 618. Restriction: Must be a: Graduate, Professional. Term Offered: Fall (odd years). Grade Modes: S/U within Student Option, Trad within Student Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 718</td>
<td>Functional Analysis II</td>
<td>3</td>
<td>(3-0-0)</td>
<td>Course Description: Spectral theory, operator theory, semigroups of transformations, and distribution theory. Prerequisite: MATH 717. Restriction: Must be a: Graduate, Professional. Term Offered: Spring (even years). Grade Mode: Traditional. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 750</td>
<td>Numerical Methods and Models I</td>
<td>3</td>
<td>(3-0-0)</td>
<td>Course Description: Derivation of model equations, introduction to solution techniques and computing. Prerequisite: MATH 561. Restriction: Must be a: Graduate, Professional. Term Offered: Fall. Grade Modes: S/U within Student Option, Trad within Student Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 751</td>
<td>Numerical Methods and Models II</td>
<td>3</td>
<td>(3-0-0)</td>
<td>Course Description: Convergence, stability, error estimates and computing. Prerequisite: MATH 561. Restriction: Must be a: Graduate, Professional. Term Offered: Spring. Grade Mode: Traditional. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 793</td>
<td>Seminar in Mathematics</td>
<td>Var[1-18]</td>
<td>(0-0-0)</td>
<td>Course Description: Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 798</td>
<td>Research</td>
<td>Var[1-18]</td>
<td>(0-0-0)</td>
<td>Course Description: Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
</tr>
<tr>
<td>MATH 799</td>
<td>Dissertation</td>
<td>Var[1-18]</td>
<td>(0-0-0)</td>
<td>Course Description: Prerequisite: None. Restriction: Must be a: Graduate, Professional. Terms Offered: Fall, Spring, Summer. Grade Mode: Instructor Option. Special Course Fee: No.</td>
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Mechanical Engineering-MECH (MECH)
Courses

MECH 101 Introduction to Mechanical Engineering Credits: 3 (3-0-0)
Course Description: The discipline of Mechanical Engineering as described in problems and problem solving methods--energy, materials, motion, fluids.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 103 Introduction to Mechanical Engineering Credits: 3 (3-0-0)
Course Description: The discipline of Mechanical Engineering as described in problems and problem solving methods-energy, materials, motion, fluids.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 105 Mechanical Engineering Problem Solving Credits: 3 (3-0-0)
Course Description: Programming and engineering problem solving techniques, algorithms and processes from physics and calculus first principles.
Prerequisite: MECH 103 and MATH 160 and PH 141, may be taken concurrently.
Registration Information: Credit not allowed for both MECH 105 and MECH 102.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 200 Introduction to Manufacturing Processes Credits: 3 (2-2-0)
Course Description: Engineering drawings, materials, manufacturing, and safety. Hand tools, cutting, drilling, the lathe, mill and numerical control.
Prerequisite: None.
Registration Information: Mechanical engineering and engineering science majors only. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 201 Engineering Design I Credits: 2 (1-2-0)
Course Description: Engineering design process and the roles of visual communication with emphasis on 3D physical solid modelers and Pro/ENGINEER.
Prerequisite: MECH 105.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 202 Engineering Design II Credits: 3 (2-2-0)
Course Description: Engineering design process with emphasis on teamwork, ideation, decision-making, project planning applied to a group design project.
Prerequisite: MECH 201 and MECH 200, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 203 Engineering Experimentation Credits: 3 (2-2-0)
Course Description: Measurement systems; experimental design; data acquisition and analysis techniques.
Prerequisite: (MECH 102 or MECH 105) and (PH 142).
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 237 Introduction to Thermal Sciences Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics, properties of materials, energy conversion, statistical aspects, heat transfer.
Prerequisite: PH 141 and MATH 160.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 262 Engineering Mechanics Credits: 4 (4-0-0)
Course Description: Forces, static equilibrium, mass center, moments of inertia, kinematics and kinetics of particles and rigid bodies.
Prerequisite: (MATH 161) and (PH 141).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 301 Engineering Design III Credits: 2 (1-2-0)
Course Description: Computer-aided engineering tools FEA and CFD for analysis and prediction of robustness and performance of mechanical components and assemblies.
Prerequisite: (CIVE 360) and (MECH 202, may be taken concurrently) and (MECH 342).
Registration Information: Credit not allowed for both MECH 301 and MECH 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 302 Engineering Design III Credits: 3 (3-0-0)
Course Description: Design fundamentals, including design processes, project planning, creativity, manufacturing, and human factors.
Prerequisite: CIVE 360 and MECH 202 and MECH 324 and MECH 337 and MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 303 Energy Engineering Credits: 3 (3-0-0)
Course Description: Energy generation (coal, oil, natural gas, solar, wind, geothermal, hydropower, tidal, biofuel, nuclear...), conversion, distribution, storage, efficiency.
Prerequisite: CBE 310 or ECE 341 or MECH 237 or MECH 337 or PH 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 307 Mechatronics and Measurement Systems Credits: 4 (3-3-0)
Course Description: Mechatronic and measurement system analysis and design; applied electronics; data acquisition; microcontroller interfacing and programming.
Prerequisite: CIVE 261 and ECE 204 and MATH 340 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
MECH 324 Dynamics of Machines Credits: 4 (3-2-0)
Course Description: Analysis and synthesis of moving machinery.
Prerequisite: CIVE 261 and MATH 340, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 325 Machine Design Credits: 3 (3-0-0)
Course Description: Design of mechanical components to avoid failure during operation. Stress analysis, failure theories, and specific mechanical components in design context.
Prerequisite: CIVE 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 331 Introduction to Engineering Materials Credits: 4 (3-2-0)
Course Description: Characteristics of metallic, plastic, and ceramic material; basic principles which relate properties of materials to their atomic and microstructure.
Prerequisite: CHEM 111 and CHEM 112 and MECH 231.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 337 Thermodynamics Credits: 4 (3-0-1)
Course Description: First and second laws, property relationships, characteristic functions, thermodynamics solver, various thermodynamics applications.
Prerequisite: MATH 261 and PH 141.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 338 Thermal/Fluid Sciences Laboratory Credit: 1 (0-3-0)
Course Description: Experimental methods in heat transfer, fluid flow, and thermodynamics.
Prerequisite: MECH 337 and MECH 342.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 342 Mechanics and Thermodynamics of Flow Processes Credits: 3 (3-0-0)
Course Description: Engineering details of viscous flow with losses, measurements, compressibility, turbomachinery, convective heat transfer.
Prerequisite: MATH 340 and PH 141 and MECH 337, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 344 Heat and Mass Transfer Credits: 3 (3-0-0)
Course Description: Transport and rate processes, conduction, convection, and radiation.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 392 Graduate Education and Research Seminar Credit: 1 (0-0-1)
Course Description: Research in graduate school and industry as a career option for mechanical engineers.
Prerequisite: MECH 231 and MECH 237.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 402 Mechanical Engineering Experimental Analysis Credits: 3 (2-2-0)
Course Description: Analysis of large data sets associated with mechanical engineering experimentation; optimization; variability, design of experiments.
Prerequisite: (MECH 307) and (MECH 324) and (MECH 331) and (MECH 338).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 407 Laser Applications in Mechanical Engineering Credits: 3 (3-0-0)
Course Description: Review of electromagnetic waves; applications of lasers and optics in engineering, e.g., position sensing, flowfield measurement, cutting and welding.
Prerequisite: PH 142.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 408 Applied Engineering Economy Credits: 3 (2-0-1)
Course Description: The basic principles and calculations of engineering economy with application to real problems, including energy and the environment.
Prerequisite: MATH 161.
Registration Information: Credit not allowed for both MECH 408 and MECH 410.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 410 Engineering Economy Principles/Calculations Credit: 1 (0-0-1)
Course Description: Basic principles and calculation of engineering economy.
Prerequisite: MATH 161.
Registration Information: Credit not allowed for both MECH 410 and MECH 408. Offered as an online course only. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 411 Manufacturing Engineering Credits: 3 (3-0-0)
Course Description: Casting, forming, machining, and welding processes used in manufacturing operations.
Prerequisite: CIVE 360 and MECH 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 417  Control Systems  Credits: 3 (2-2-0)
Course Description: Feedback and forward loop control design and simulation; discrete time and frequency domain methods with implementation considerations.
Prerequisite: MATH 340 and MECH 307.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 424  Advanced Dynamics  Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid bodies. Hamilton's principle and Lagrange's equations for lumped parameter extended bodies and distributed systems.
Prerequisite: MECH 324.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 425  Mechanical Engineering Vibrations  Credits: 4 (3-2-0)
Course Description: Vibrations applied to rotating machinery and structures. SDOF and MDOF systems, mode shapes, vibration measurements and control. Hands-on lab.
Prerequisite: MECH 324.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 431  Metals and Alloys  Credits: 3 (3-0-0)
Course Description: Engineering metals and alloys, modification of properties by alloying, plastic deformation, and heat treatment. Fundamentals of physical metallurgy.
Prerequisite: MECH 331.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 432  Engineering of Nanomaterials  Credits: 3 (3-0-0)
Course Description: Structure, properties, and processing of extremely small (10 to the minus 9 m) synthetic and natural materials.
Prerequisite: MECH 331.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 437  Internal Combustion Engines  Credits: 3 (2-0-1)
Course Description: Application of thermodynamics, heat transfer, and fluid mechanics to internal combustion engines.
Prerequisite: MECH 344.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 460  Aeronautics  Credits: 3 (3-0-0)
Course Description: Thermodynamics and fluid mechanics principles applied to the mechanics, aerodynamics, performance, stability, and control of airplanes.
Prerequisite: MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 463  Building Energy Systems  Credits: 3 (3-0-0)
Course Description: Comfort, psychrometrics, loads, solar radiation, heating and cooling system design, transport, solar system design, economics.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 468  Space Propulsion and Power Engineering  Credits: 3 (3-0-0)
Course Description: Orbital mechanics and space missions; chemical, nuclear, and electric rockets; nuclear heat sources; thermoelectric and photovoltaic devices.
Prerequisite: ECE 204 and MECH 337 and MECH 342.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 470  Biomedical Engineering  Credits: 3 (3-0-0)
Also Offered As: BIOM 470.
Course Description: Engineering application in human/animal physiology, diagnosis of disease, treatment, rehabilitation, human genome manipulation.
Prerequisite: (MATH 155 or MATH 160) and (PH 141).
Registration Information: Credit not allowed for both MECH 470 and BIOM 470.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 486A  Engineering Design Practicum I  Credits: 4 (1-12-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: MECH 301 and MECH 325 and MECH 344 and MECH 402, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 486B  Engineering Design Practicum II  Credits: 4 (1-12-0)
Course Description: Capstone engineering design project; transition experience to the mechanical engineering profession in industry and graduate education.
Prerequisite: MECH 338 and MECH 486A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MECH 498A  Engineering Research Practicum: Fall  Credits: 4  (1-12-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: MECH 301 and MECH 325 and MECH 402, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 498B  Engineering Research Practicum: Spring  Credits: 4  (1-12-0)
Course Description: Capstone engineering research project; transition experience to graduate research and education.
Prerequisite: MECH 338 and MECH 498A.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 501  Engineering Project and Program Management  Credits: 3  (0-0-3)
Course Description: Engineering program management fundamentals, program planning and control strategies, risk assessment, work breakdown structures and costing options.
Prerequisite: None.
Registration Information: Admission to the M.E. program. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 502  Advanced/Additive Manufacturing Engineering  Credits: 3  (3-0-0)
Course Description: Materials, controls, and mechanics applied to additive manufacturing, rapid prototyping; direct digital manufacturing.
Prerequisite: MECH 202 and MECH 331.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 503  Engineering Maintenance Process  Credits: 3  (0-0-3)
Course Description: Design for engineering maintainability development and management of effective maintenance programs applicable to typical industrial environments.
Prerequisite: None.
Registration Information: Admission to the M.E. program. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 504  Specification and Procurement of Engr Systems  Credits: 3  (0-0-3)
Course Description: Specification and procurement of engineering systems, including contracts, legal, ethics and Statement of Work development.
Prerequisite: None.
Registration Information: Admission to the M.E. program. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 507  Laser Diagnostics for Thermosciences  Credits: 3  (3-0-0)
Course Description: Basics of optics, spectroscopy, and lasers. Physics and applications of laser diagnostic techniques used in thermosciences.
Prerequisite: PH 142.
Registration Information: Sections may be offered: Online.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 509  Design and Analysis in Engineering Research  Credits: 3  (3-0-0)
Course Description: Design, model building, analysis and reporting in engineering and manufacturing research and experimentation.
Prerequisite: MATH 340 and STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 511  Engineering Decision Making Under Uncertainty  Credits: 3  (3-0-0)
Course Description: Systems engineering and engineering economic methodologies for evaluating interdependent capital expenditure proposals under incomplete information.
Prerequisite: MECH 410 and STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 512  Reliability Engineering  Credits: 3  (3-0-0)
Course Description: Models to predict time to failure of mechanical or electronic devices, reliability data analysis and case studies.
Prerequisite: STAT 315 and MECH 513.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 513  Simulation Modeling and Experimentation  Credits: 3  (3-0-0)
Course Description: Logic/analytic modeling in simulations. Event and transient entity-based simulation languages. Simulation design, experimentation and analysis.
Prerequisite: STAT 315.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 520  Finite Element Analysis in Mechanical Engr  Credits: 3  (3-0-0)
Course Description: Application of FEA as a tool to analyze mechanical engineering problems.
Prerequisite: (CIVE 360) and (MATH 340 or MATH 530).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 523  Vehicle Energy Storage System Design  Credits: 3  (3-0-0)
Course Description: Develop vehicle system designs utilizing electrochemical energy storage systems such as batteries and capacitors.
Prerequisite: MECH 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 524 Principles of Dynamics Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of rigid body motion; Lagrangian and Hamiltonian formulations of mechanics; applications to engineering problems.
Prerequisite: MECH 324.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 525 Cell and Tissue Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 525.
Course Description: Cell and tissue engineering concepts and techniques with emphasis on cellular response, cell adhesion kinetics, and tissue engineering design.
Prerequisite: BC 351 or BMS 300 or BMS 500 or BZ 310 or NB 501.
Registration Information: Credit only allowed for one of the following: MECH 525, BIOM 525, and CBE 525. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

MECH 526 Fundamentals of Vehicle Dynamics Credits: 3 (3-0-0)
Course Description: Kinetics of vehicle suspensions, steady-state and transient stability and control, tires, wheel and suspension geometry and loads, dampers, steering.
Prerequisite: MECH 324.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 527 Hybrid Electric Vehicle Powertrains Credits: 3 (3-0-0)
Course Description: Hybrid powertrains and modeling including vehicle dynamics, internal combustion engine, electric motor, energy storage, and control.
Prerequisite: MECH 307.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 529 Advanced Mechanical Systems Credits: 3 (3-0-0)
Course Description: Modeling, analysis, and synthesis of practical mechanical devices in which dynamic response is dominant consideration.
Prerequisite: MECH 307.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 530 Advanced Composite Materials Credits: 3 (3-0-0)
Course Description: Materials aspects of advanced composite constituents and how their combination yields synergistic results.
Prerequisite: CIVE 360 and MECH 337.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 531 Materials Engineering Credits: 3 (3-0-0)
Also Offered As: BIOM 531.
Course Description: Selection of structural engineering materials by properties, processing, and economics; materials for biomedical and biotechnology applications.
Prerequisite: MECH 331 or MECH 431.
Registration Information: Credit not allowed for both MECH 531 and BIOM 531. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 532 Materials Issues in Mechanical Design Credits: 3 (3-0-0)
Also Offered As: BIOM 532.
Course Description: Failure mechanisms from materials viewpoint with emphasis on use in design. Fracture, creep, fatigue, and corrosion.
Prerequisite: MECH 331.
Registration Information: Credit not allowed for both MECH 532 and BIOM 532. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 533 Mechanical Engineering Thermodynamics Credits: 3 (3-0-0)
Course Description: First and second laws of thermodynamics applied to engineering devices and systems. Introduction to availability, energy, and lost work analysis.
Prerequisite: MECH 337.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 534 Biofluid Mechanics Credits: 3 (3-0-0)
Course Description: Fluid dynamic concepts for understanding fluid motion in living organs/organisms; advanced research applications.
Prerequisite: MECH 342 or CIVE 300 or BMS 300 and PH 121 or BMS 300 and PH 141 or BMS 420.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 544 Advanced Heat Transfer Credits: 3 (3-0-0)
Course Description: Fundamentals and engineering applications of heat transfer including conduction, convection, and radiation.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 551  Physical Gas Dynamics I  Credits: 3 (3-0-0)
Course Description: Characteristics of real gases in reacting and nonequilibrium systems; equilibrium air; statistical mechanics, chemical thermodynamics.
Prerequisite: MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 552  Applied Computational Fluid Dynamics  Credits: 3 (3-0-0)
Course Description: Introductory theory of CFD, formulation of engineering problems for CFD analyses, mesh generation, solver settings, and postprocessing.
Prerequisite: CIVE 300 or CBE 331 or MECH 342.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 554  Fundamentals of Robot Mechanics and Controls  Credits: 3 (3-0-0)
Course Description: Kinematics of robots, controls for robots.
Prerequisite: MECH 417.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 555  Turbomachinery  Credits: 3 (3-0-0)
Course Description: Application of fundamental principles of turbomachinery.
Prerequisite: MECH 337 and MECH 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 556  Combustion  Credits: 3 (3-0-0)
Course Description: Combustion processes: explosions, detonations, flame propagation, ignition, generation of pollutants in moving and stationary energy conversion systems.
Prerequisite: MECH 342.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 557  Micro-Electro-Mechanical Devices  Credits: 3 (3-0-0)
Course Description: Micro-electro-mechanical processes and applications in sensors, optics, and structures.
Prerequisite: MECH 344 with a minimum grade of C or ECE 331 with a minimum grade of C.
Registration Information: Credit not allowed for both MECH 569 and ECE 569. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 564  Computer Aided Design  Credits: 3 (3-0-0)
Course Description: Applications of CAD/CAM/CAE processes, software tools, and their applications in design.
Prerequisite: MECH 307 and MECH 324.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 565  Micro-Electromechanical Systems  Credits: 3 (3-0-0)
Course Description: Design and analysis of MEMS devices.
Prerequisite: MECH 344.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 566  Bio-Inspired Surfaces  Credits: 3 (3-0-0)
Course Description: Analysis of surface functionalities of various biological species; identification of design principles.
Prerequisite: MECH 342 and CHEM 111.
Registration Information: Sections may be offered: Online. Credit not allowed for both BIOM 574 and MECH 574.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 567  Solar and Alternative Energies  Credits: 3 (3-0-0)
Course Description: Solar radiation, flat-plate collectors, energy storage, space heating and cooling, power generation, applications, simulation.
Prerequisite: MECH 337 and MECH 342 and MECH 344.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 569  Bio-Inspired Materials  Credits: 3 (3-0-0)
Course Description: Physical processes in broad-beam electron-bombardment ion sources for space propulsion and ion machining applications.
Prerequisite: MATH 340.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 570  Fluid Dynamics  Credits: 3 (3-0-0)
Course Description: Kinematics and dynamics of viscous and inviscid fluids.
Prerequisite: MECH 337 and MECH 342 and MECH 344.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 571  Physical Gas Dynamics II  Credits: 3 (3-0-0)
Course Description: Principles of nonequilibrium gas dynamics.
Prerequisite: MECH 551.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MECH 628  Applied Fracture Mechanics  Credits: 3 (3-0-0)
Course Description: Stress distribution near cracks; energy criteria for fracture; design criteria; fracture toughness testing.
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 657  Advanced Computational Gas Dynamics  Credits: 4 (3-2-0)
Course Description: Advanced computational algorithms for gas dynamics.
Prerequisite: MECH 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 658  Advanced Combustion Theory and Modeling  Credits: 3 (3-0-0)
Course Description: Asymptotic structure of flames, limit phenomena and multi-phase combustion.
Prerequisite: MECH 558.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 661  Theory/Control of Internal Combustion Engines  Credits: 3 (3-0-0)
Course Description: Theory and applications of internal combustion engines. Alternative fuels, engine control, and pollution prevention.
Prerequisite: MECH 437.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 671  Orthopedic Tissue Biomechanics  Credits: 3 (3-0-0)
Course Description: Linear elastic, finite deformation, and viscoelastic theories applied to the mechanical behavior of orthopedic tissues (bone, tendon, cartilage).
Prerequisite: CIVE 560.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both MECH 671 and BIOM 671 or for MECH 671/BIOM 671 and MECH 571/BIOM 571.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 684  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 692  Seminar  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695A  Independent Study: Bioengineering  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695B  Independent Study: Energy Conversion  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695C  Independent Study: Environmental Engineering  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695D  Independent Study: Heat and Mass Transfer  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695E  Independent Study: Industrial and Systems Engineering  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695F  Independent Study: Mechanics and Design  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695G  Independent Study: Computer-Assisted Engineering  Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MECH 695H Independent Study: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695I Independent Study: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695J Independent Study: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695K Independent Study: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695L Independent Study: Plasma Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695M Independent Study: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 695A Thesis: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699B Thesis: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699C Thesis: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699E Thesis: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699F Thesis: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699H Thesis: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699I Thesis: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
MECH 699J Thesis: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699K Thesis: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 699L Thesis: Plasma Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 721 Special Topics in Design and Manufacturing Credits: Var[1-18] (0-0-0)
Course Description: Special topics in engineering design and manufacturing.
Prerequisite: MECH 514 or MECH 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MECH 729 Special Topics in Mechanics and Materials Credits: 3 (3-0-0)
Course Description: Advanced topics in discipline of engineering mechanics and materials; associated analysis and manufacturing techniques.
Prerequisite: MECH 524 or MECH 530.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MECH 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799A Dissertation: Bioengineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799B Dissertation: Energy Conversion Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799C Dissertation: Environmental Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799D Dissertation: Heat and Mass Transfer Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799E Dissertation: Industrial and Systems Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799F Dissertation: Mechanics and Design Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
MECH 799H Dissertation: Robotics Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799J Dissertation: Computational Fluids Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799K Dissertation: Materials Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MECH 799M Dissertation: Motorsport Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MECH 799N Dissertation: Solar Engineering Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 149 The Microbial World Credits: 3 (3-0-0)
Course Description: Importance of microbiology in daily life, with emphasis on positive and negative roles of microbes, infectious disease, and current microbiology issues.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 150 Introduction to Research Methods Credits: 3 (0-6-0)
Course Description: Undergraduate research experience highlighting fundamental skills of laboratory research while working towards the goal of novel microbial discovery.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 192 Microbiology First-Year Seminar Credits: 2 (0-0-2)
Course Description: Introduction to microbiology major and faculty; academic and career planning; information sources in biomedical sciences.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 260 The World of Parasites Credits: 3 (3-0-0)
Course Description: Introduction to parasitology: evolution, ecology, epidemiology, physiology, and morphology of representative parasites of every group.
Prerequisite: (CHEM 111) and (BZ 110 or LIFE 102).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 275 Microcomputing Applications in Microbiology Credits: 2 (1-0-1)
Course Description: Network software on MS-DOS microcomputers will be used to acquire and analyze data and information that are commonly encountered in microbiology.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 298 Introductory Research Credits: Var[1-3] (0-0-0)
Course Description: Freshman/sophomore research experience in a working research environment.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 300 General Microbiology Credits: 3 (3-0-0)
Course Description: Structure, function, development, physiology, and molecular biology of microorganisms emphasizing bacteria.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Microbio, Immun, Pathology-MIP (MIP)

Courses
MIP 101 Introduction to Human Disease (GT-SC2) Credits: 3 (3-0-0)
Course Description: Survey of human systems and diseases.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 192 Microbiology First-Year Seminar Credits: 2 (0-0-2)
Course Description: Introduction to microbiology major and faculty; academic and career planning; information sources in biomedical sciences.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 260 The World of Parasites Credits: 3 (3-0-0)
Course Description: Introduction to parasitology: evolution, ecology, epidemiology, physiology, and morphology of representative parasites of every group.
Prerequisite: (CHEM 111) and (BZ 110 or LIFE 102).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 275 Microcomputing Applications in Microbiology Credits: 2 (1-0-1)
Course Description: Network software on MS-DOS microcomputers will be used to acquire and analyze data and information that are commonly encountered in microbiology.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 298 Introductory Research Credits: Var[1-3] (0-0-0)
Course Description: Freshman/sophomore research experience in a working research environment.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 300 General Microbiology Credits: 3 (3-0-0)
Course Description: Structure, function, development, physiology, and molecular biology of microorganisms emphasizing bacteria.
Prerequisite: (BZ 110 or BZ 120 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently).
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 302  General Microbiology Laboratory  Credits: 2 (0-4-0)
Course Description: Laboratory skills and techniques for isolating, characterizing, and identifying bacteria.
Prerequisite: MIP 300, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 303  General Microbiology--Honors Recitation  Credit: 1 (0-0-1)
Course Description: Research and present topics related to the material presented in MIP 300.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 315  Human and Animal Disease  Credits: 3 (3-0-0)
Course Description: Biological systems critical to mammalian physiology and how each is affected by metabolic, genetic, environmental, and infectious agents.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 334  Food Microbiology  Credits: 3 (3-0-0)
Course Description: Microorganisms in production of foods, in preservation and spoilage, and in food-borne diseases. Control of microorganisms in foods.
Prerequisite: LIFE 205 or MIP 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 335  Food Microbiology Laboratory  Credits: 2 (0-4-0)
Course Description: Laboratory skills and techniques related to the presence of microorganisms in food, production, and preservation.
Prerequisite: (LIFE 206 or MIP 302) and (MIP 334, may be taken concurrently).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 342  Immunology  Credits: 4 (3-0-1)
Course Description: Principles of immunology: components of the immune system, interactions of humoral and cellular elements, and clinical applications of basic concepts.
Prerequisite: (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently or CHEM 345, may be taken concurrently) and (LIFE 201B or LIFE 210 or MIP 300).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 343  Immunology Laboratory  Credits: 2 (0-4-0)
Course Description: Techniques used in research and clinical immunology, including diagnostic problem solving and data analysis.
Prerequisite: MIP 302 and MIP 342, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 350  Microbial Diversity  Credits: 3 (3-0-0)
Course Description: Physiological, taxonomic, and phylogenetic aspects of microbial diversity. Yeasts and filamentous fungi as microbial entities.
Prerequisite: MIP 300.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 351  Medical Bacteriology  Credits: 3 (3-0-0)
Course Description: Bacteria which cause human and veterinary diseases; host-parasite relationships, disease mechanisms, prevention, and therapy.
Prerequisite: MIP 342.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 352  Medical Bacteriology Laboratory  Credits: 3 (0-6-0)
Course Description: Laboratory skills and techniques necessary for identifying medically important bacteria.
Prerequisite: MIP 302 and MIP 351, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 384  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Written consent of department required. Maximum of 10 credits allowed in course. A maximum of 10 combined credits in all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 400A  Capstone in Microbiology: Medical Microbiology  Credits: 2 (2-0-0)
Course Description: Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400B  Capstone in Microbiology: Biotechnology  Credits: 2 (0-0-2)
Course Description: Prerequisite: (BC 351 or BC 401) and (MIP 300).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400C  Capstone in Microbiology: Immunology  Credits: 2 (2-0-0)
Course Description: Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or MIP 420, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 400D Capstone in Microbiology: Microbial Diversity/Ecology Credits: 2 (2-0-0)
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400E Capstone in Microbiology: Microbial Genetics Credits: 2 (2-0-0)
Course Description: Principles of genetics at molecular level; mutation, recombination, complementation, suppression, control of gene expression, and recombinant DNA.
Prerequisite: MIP 300 and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400F Capstone in Microbiology: Virology Credits: 2 (2-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or BC 401, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 400G Capstone in Microbiology: Service Learning Credits: 2 (2-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or BC 401, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 420 Medical and Molecular Virology Credits: 4 (4-0-0)
Course Description: Principles of animal virology: structure, classification, assay, diagnosis, control, replication, genetics, host-parasite relationships.
Prerequisite: (MIP 342) and (MIP 351, may be taken concurrently or BC 401, may be taken concurrently).
Registration Information: Written consent of department required.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 425 Virology and Cell Culture Laboratory Credits: 2 (0-4-0)
Course Description: Isolation and characterization of viruses. Viral diagnostic and cell culture techniques.
Prerequisite: MIP 302 and MIP 420, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 432 Microbial Ecology Credits: 3 (2-0-1)
Course Description: Principles of microorganism interactions with their living and non-living environments; implications for the environment, plants and animals.
Prerequisite: MIP 300.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 433 Microbial Ecology Laboratory Credit: 1 (0-3-0)
Course Description: Experimental microbial ecology; the design, conduct and interpretation of experiments that illustrate basic principles of microbial ecology.
Prerequisite: MIP 432, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 436 Industrial Microbiology Credits: 4 (2-4-0)
Course Description: Use of microorganisms for producing commercially valuable products.
Prerequisite: LIFE 206 or MIP 302.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 443 Microbial Physiology Credits: 4 (3-0-1)
Course Description: Structure, function of bacterial constituents; comparison with other organisms. Bacterial growth, energy production, biosynthesis.
Prerequisite: (MIP 300) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 450 Microbial Genetics Credits: 3 (3-0-0)
Course Description: Principles of genetics at molecular level; mutation, recombination, complementation, suppression, control of gene expression, and recombinant DNA.
Prerequisite: (MIP 300) and (BC 351 or BC 401).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BSPM 462 and BZ 462.
Course Description: Protozoa, helminthes, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (MIP 302 or LIFE 206 or BZ 212).
Registration Information: Credit allowed for only one of the following: MIP 462, BSPM 462, BZ 462. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: Principles of genetics at molecular level; mutation, recombination, complementation, suppression, control of gene expression, and recombinant DNA.
Prerequisite: MIP 300.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MIP 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description: Faculty-supervised investigation of areas of special interest in microbiology, virology, microbial physiology, or microbial genetics.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 498 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: MIP 302.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 530 Advanced Molecular Virology Credits: 4 (3-0-1)
Course Description: Virus-host interactions at the molecular and cellular level.
Prerequisite: (BC 351 or BC 401) and (BC 463 or MIP 450).
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 533 Epidemiology of Infectious Diseases/Zoonoses Credits: 3 (2-0-1)
Also Offered As: VS 533.
Course Description: Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.
Prerequisite: MIP 300.
Registration Information: Credit not allowed for both MIP 533 and VS 533. Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 540 Biosafety in Research Laboratories Credits: 2 (2-0-0)
Course Description: Practical applications of biosafety principles, including lab practices and regulatory aspects of research involving infectious microorganisms and rDNA.
Prerequisite: MIP 300.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 543 RNA Biology Credits: 3 (3-0-0)
Course Description: Gene expression and regulation that occurs at the level of RNA (e.g., splicing, stability, export, translation, RNAi, etc.).
Prerequisite: BC 351, may be taken concurrently or BC 401, may be taken concurrently.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 550 Microbial and Molecular Genetics Laboratory Credits: 4 (2-6-0)
Course Description: Use of both in vivo genetics and in vitro molecular techniques to study gene structure, function, and regulation in bacteria.
Prerequisite: MIP 302 and MIP 450.
Registration Information: Written consent of department required. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 555 Principles and Mechanisms of Disease Credits: 3 (3-0-0)
Course Description: Principles of disease processes; emphasis on reactivity of the diseased cell, tissue, organ, or organism.
Prerequisite: BMS 300.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 563 Biology of Disease Vectors Credits: 3 (3-0-0)
Course Description: Vector physiology and genomics, new strategies in vector control, and vector/host interactions.
Prerequisite: MIP 462 or BSPM 462 or BZ 462.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 576 Bioinformatics Credits: 3 (3-0-0)
Also Offered As: BSPM 576.
Course Description: Technical computing across platforms using bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BC 350 or CM 501 or CS 155 or ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307.
Registration Information: Credit not allowed for both MIP 576 and BSPM 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 577 Computer Analysis in Population Genetics Credits: 2 (0-4-0)
Also Offered As: BZ 577.
Course Description: Computational and statistical techniques and practical exercises in discrete and quantitative genetics.
Prerequisite: MIP 578, may be taken concurrently or BZ 578.
Registration Information: Credit not allowed for both MIP 577 and BZ 577.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 578 Genetics of Natural Populations Credits: 4 (3-0-1)
Also Offered As: BZ 578.
Course Description: Theoretical and empirical aspects of the genetics of natural populations; current molecular techniques and statistical analysis.
Prerequisite: (BZ 350 or LIFE 201A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307).
Registration Information: Must register for lecture and recitation. Credit not allowed for both MIP 578 and BZ 578.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 611 Advanced Microbiological Research Methods Credits: 4 (2-0-2)
Course Description: In-depth presentation of the ever-growing arsenal of techniques needed to be an effective experimental microbiologist/molecular biologist.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Must register for lecture and recitation.
Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 612 Applied Immunology Credits: 3 (3-0-0)
Course Description: Application of classic and modern principles in immunology currently being used in the medical, biotechnology and basic research fields.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 613 Applied Microbiology and Virology Credits: 4 (4-0-0)
Course Description: Application of bacteria, fungi and viruses in translational research, from drug and vaccine development to the generation of clean energy.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 614 Medical Microbiology Credits: 3 (3-0-0)
Course Description: In-depth examination of the pathogenic mechanisms of medically important bacteria, fungi, parasites and viruses.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Sections may be offered: Online. Enrollment in the face-to-face offering of the course requires admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 615 Ophthalmic Pathology Credit: 1 (1-0-0)
Course Description: Background in normal ocular histology as well as pathologic changes in the eye, taught through a combination of lectures and class discussions.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 616 Modern Molecular Biology for Microbiologists Credits: 4 (3-0-1)
Course Description: Develop a working knowledge in the theory and applications of modern molecular biology to applied and translational research uses in microbiology.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 617 Principles of Biodefense/Emerging Pathogens Credits: 3 (3-0-0)
Course Description: In-depth analysis of the physiology, biology and epidemiology of biodefense agents and emerging pathogens.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 618 MIP Masters Seminar Series Credit: 1 (0-0-1)
Course Description: Foster the development of MIP master's students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 619 MIP Masters Topics Credits: 2 (1-0-1)
Course Description: Foster the development of MIP master's students by improving communication skills and discussion of cutting edge research.
Prerequisite: None.
Restriction: Must be a Graduate.
Registration Information: Admission to the M.S. in Microbiology, Immunology, and Pathology, Plan B program. May be taken twice for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 624 Advanced Topics in Microbial Ecology Credits: 2 (1-0-1)
Course Description: Recent conceptual developments in microbial ecology, emphasizing theoretical aspects of microbial ecology, particularly in an evolutionary context.
Prerequisite: MIP 300 and MIP 432.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 628 Immunity to Infection Credits: 3 (3-0-0)
Course Description: How microorganisms have evolved to counteract the immune system and how the immune system has evolved to resist microbes.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 630 Advances in Microbial Physiology Credits: 3 (3-0-0)
Course Description: Contemporary developments in bacterial structure, function, metabolism, and genetics.
Prerequisite: MIP 443.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 636 Mechanisms of Viral Infection and Disease Credits: 4 (3-0-1)
Course Description: Cytopathic mechanisms, pathogenetic events in viral diseases; host response and antiviral immunity; cancer induction by DNA and RNA viruses.
Prerequisite: MIP 420 or MIP 530.
Restriction: Must be a Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 643 Grant Writing for Microbiology/Pathology Credit: 1 (1-0-0)
Course Description: To effectively communicate ideas, goals and approaches in a scientific grant proposal.
Prerequisite: None.
Registration Information: Enrollment in an MIP graduate program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 651 Immunobiology Credits: 3 (3-0-0)
Course Description: Structure, function, regulation of immunoglobulins and the immune system. Cellular immunity including transplantation and cancer.
Prerequisite: MIP 342.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 654 Research Policies and Regulations Credit: 1 (1-0-0)
Course Description: Reviews CSU and federal policies, rules, and regulations on integrity, use of humans and animals, authorship, data, genetics, etc., using case studies.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 666 Writing Scientific Manuscripts Credits: 3 (0-0-3)
Course Description: Writing biological science manuscripts for publication.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 670 Molecular Immunology and Immunogenetics Credits: 3 (3-0-0)
Course Description: Molecular basis and genetics of immune response. Biochemistry of immunologically mediated diseases.
Prerequisite: MIP 651.
Restriction: Must be a Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 675 Advanced Bioanalytic Pathology Credits: 3 (3-0-0)
Course Description: Laboratory medicine for post-graduate veterinarians and professional veterinary medical students.
Prerequisite: VM 724.
Registration Information: Written consent of instructor or D.V.M. degree required.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 677 Advanced Bioanalytic Pathology Credits: 3 (3-0-0)
Course Description: Laboratory medicine for post-graduate veterinarians and professional veterinary medical students.
Prerequisite: VM 724.
Registration Information: Written consent of instructor or D.V.M. degree required.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 689 Research Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Enrollment in an MIP graduate program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 700 Topics in Microbiology Credit: 1 (1-0-0)
Course Description: Current literature in bacteriology, virology, genetics, and immunology.
Prerequisite: MIP 300.
Restriction: Must be a Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MIP 720 Methods of Carbohydrate Analysis  Credits: 2 (1-3-0)
Course Description: Structural analysis of complex carbohydrates using gas chromatography, mass spectrometry, and nuclear magnetic resonance.
Prerequisite: CHEM 346.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

MIP 740 Microbial and Molecular Genetics  Credits: 3 (2-0-1)
Course Description: Molecular biology and genetics of prokaryotic and eukaryotic cells and their viruses; strategies for genetic manipulation.
Prerequisite: MIP 450.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 760 Mechanisms of Bacterial Pathogenesis  Credits: 3 (2-0-1)
Course Description: Mechanisms of bacterium-host interaction at molecular and cellular levels in pathogenesis of bacterial disease.
Prerequisite: BC 351 and MIP 342.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 765 Comparative Neuropathology  Credits: 2 (1-2-0)
Course Description: Spontaneous diseases of nervous system of domesticated, laboratory, and wild animals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 766 Cytopathology--Clinical Pathology  Credit: 1 (0-0-1)
Course Description: Discussion of cytology cases that are diagnostically challenging, medically interesting, or classic case examples. Discussions and microscopic reviews of the cases will be led by a clinical pathologist.
Prerequisite: MIP 786A and MIP 786B and MIP 786C.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MIP 767 Advanced General Pathology  Credits: 3 (3-0-0)
Course Description: In-depth, detailed study of general pathology and molecular mechanisms of disease. Help prepare students in the Anatomic and/or Clinical Pathology Residency prepare for the ACVP Board examination. Enhance the pathology knowledge and skills of Professional Veterinary Medicine students and graduate students in related disciplines.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MIP 778 Pathobiology of Laboratory Animals  Credits: 3 (3-0-0)
Course Description: Unique natural biology and diseases of laboratory animal species emphasizing clinical, diagnostic, morphologic and clinical pathologic features.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MIP 784 Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786A Practicum: Comparative Gross and Histologic Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786B Practicum: Surgical Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786C Practicum: Clinical Pathology  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 786D Practicum: Comparative Medicine  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Post-DVM graduate students only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MIP 792B  Seminar: Research/Faculty  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792C  Seminar: Microscopic and Bioanalytic Pathology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792D  Seminar: Anatomic Pathology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 792E  Seminar: Clinical Pathology  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: M.S. and Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 796  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 798  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MIP 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Ph.D. candidates only. Maximum of 3 credits allowed per subtopic.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Military Science-MLSC (MLSC)

Courses

MLSC 101  Leadership and Personal Development  Credits: 2 (2-0-0)
Course Description: Leadership principles and techniques; first aid; weapons common to U.S. forces; rifle marksmanship; branches of the Army; physical fitness training.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 102  Introduction to Tactical Leadership  Credits: 2 (2-0-0)
Course Description: Small unit leadership; survival techniques; knots, rappelling; map reading, land navigation; plant/animal identification; physical fitness training.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 196  Military Science Group Study I  Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 197  Military Science Group Study II  Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 102.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MLSC 201  Innovative Team Leadership  Credits: 2 (2-0-0)
Course Description: Leadership assessment; principles of war; small unit
operations; basic management skills; oral communication; counseling/
behavioral evaluation techniques.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 202  Foundations of Tactical Leadership  Credits: 2 (2-0-0)
Course Description: Operation orders; theories of conflict; small unit
operations; troop leading procedures; observing and classifying behavior;
physical fitness training.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 250  Basic Camp Leader Internship  Credits: Var[2-8] (0-0-0)
Course Description: Practical leadership development and management
skills in a military operations environment.
Prerequisite: None.
Registration Information: Maximum of 8 credits allowed in course.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 294  Independent Study  Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: MLSC 101 and MLSC 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MLSC 295  Independent Study  Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MLSC 296  Military Science Group Study III  Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 201.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 297  Military Science Group Study IV  Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 202.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 301  Adaptive Tactical Leadership  Credits: 3 (3-0-0)
Course Description: Leadership theory review; leadership assessment
program to further develop leadership and management skills; physical
fitness training.
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 396.
Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 302  Leadership in Changing Environments  Credits: 3 (3-0-0)
Course Description: Command and staff functions; operations orders;
tactical unit operations; military skills; physical fitness training; field
training exercises.
Prerequisite: MLSC 301.
Registration Information: Must have concurrent registration in MLSC 397.
Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 357  The American Military Experience  Credits: 3 (3-0-0)
Also Offered As: HIST 357.
Course Description: Role of the armed forces in American society;
development of military traditions, institutions, and practices.
Prerequisite: HIST 100 or HIST 101 or HIST 115 or HIST 120 or HIST 121
or HIST 150 or HIST 151 or HIST 170 or HIST 171.
Registration Information: Completion of 45 credits. Credit not allowed for
both MLSC 357 and HIST 357.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 386  Advanced Camp Practicum  Credits: 8 (1-12-1)
Course Description: Leadership principles and skills applied to actual
field situations.
Prerequisite: MLSC 301.
Registration Information: Must register for lecture, laboratory and
recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 395  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description: Leadership theory and skills as applied to the
military.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 396  Military Science Group Study V  Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MLSC 397 Military Science Group Study VI Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 401 Developing Adaptive Leaders Credits: 3 (3-0-0)
Course Description: Role of the Army officer, ethics, professionalism; military justice; law of land warfare; preparation for active duty; physical fitness training.
Prerequisite: (MLSC 302) and (MLSC 357 or HIST 357).
Registration Information: Must have concurrent registration in MLSC 496.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 402 Leadership in a Complex World Credits: 3 (3-0-0)
Course Description: Military staff functions and issues in leadership.
Prerequisite: MLSC 301 and MLSC 302.
Registration Information: Must have concurrent registration in MLSC 497.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 496 Military Science Group Study VII Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 401.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MLSC 497 Military Science Group Study VIII Credit: 1 (0-2-0)
Course Description:
Prerequisite: None.
Registration Information: Must have concurrent registration in MLSC 402.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

Music-MU (MU)

Courses

MU 100 Music Appreciation (GT-AH1) Credits: 3 (3-0-0)
Course Description: Survey of music from a wide range of periods and styles.
Prerequisite: None.
Registration Information: Previous musical training not necessary. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 111 Music Theory Fundamentals (GT-AH1) Credits: 3 (3-0-0)
Course Description: Basic visual and aural fundamentals of music including intervals, scales, key and time signatures, chord construction, basic harmony, melodic writing.
Prerequisite: None.
Registration Information: For non-music majors and majors needing basic skills.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

MU 117 Music Theory I Credits: 4 (3-2-0)
Course Description: Introduction to diatonic harmony and part-writing; basic sight singing, ear training, and keyboard harmony skills.
Prerequisite: None.
Registration Information: Must complete satisfactory completion of placement exam. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 118 Music Theory II Credits: 4 (3-2-0)
Course Description: Four-part diatonic writing; diatonic modulation; diatonic sight singing, ear training, and keyboard harmony skills.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 131 Introduction to Music History and Literature (GT-AH1) Credits: 3 (3-0-0)
Course Description: Landmarks of music history and literature from 1300 to the present.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).
MU 150 Piano Class I Credit: 1 (0-2-0)
Course Description: Basic piano technique; keyboard harmony.
Prerequisite: None.
Registration Information: Required of all Bachelor of Music majors, except those in the piano or organ performance option. May test out if adequate keyboard skills.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 151 Piano Skills for Music Educators Credit: 1 (0-2-0)
Course Description: Intermediate piano technique and appropriate sightreading skills for music educators.
Prerequisite: MU 150.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 152 Piano Skills for Choral Directors Credit: 1 (0-2-0)
Course Description: Advanced piano skills necessary for choral directing and accompaniment.
Prerequisite: MU 151.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

MU 153 Piano Skills for Music Therapists Credit: 1 (0-2-0)
Course Description: Practical application of functional piano skills for clinical music therapists.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 154 Jazz Piano Class Credit: 1 (0-2-0)
Course Description: Basic jazz piano skills that serve as the foundation for a jazz pianist or composer.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 155 Guitar Class I Credits: 2 (2-0-0)
Course Description: Fundamental techniques for guitar emphasizing chord study and related literature.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 156 Guitar Class II Credits: 2 (2-0-0)
Course Description: Fundamentals of guitar emphasizing solo literature and accompaniment.
Prerequisite: MU 155.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 157 Voice Class I Credits: 2 (2-0-0)
Course Description: Techniques of singing, emphasizing posture, breathing, tone production and diction, as applied to song literature.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 158 Voice Class II Credits: 2 (2-0-0)
Course Description: Techniques of singing, emphasizing resonance, articulation, projection, and repertoire.
Prerequisite: MU 157.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 172A Freshman Voice Studio: English/Italian Credits: 2 (1-2-0)
Course Description: Applied voice study and English/Italian diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 172B Freshman Voice Studio: German, French Credits: 2 (1-2-0)
Course Description: Applied voice study and German/French diction in a group setting for freshman voice majors.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 201 Men's Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for men's voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 202 University Chorus Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for mixed voices.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 204 Marching Band Credit: 1 (0-5-0)
Course Description: Marching routines utilizing popular and jazz musical idioms with performances at all home football games and other athletic events.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 205 Concert Band Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of basic concert band literature.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 206  Colorado State University Concert Orchestra  Credit: 1 (0-3-0)
Course Description: Performance opportunity for music majors and non
music majors to perform standard orchestral literature.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 217  Music Theory III  Credits: 4 (3-2-0)
Course Description: Harmonic language of the 17th and 18th centuries;
diatonic and chromatic sight singing, ear training, and keyboard harmony
skills.
Prerequisite: MU 118.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 218  Music Theory IV  Credits: 4 (3-2-0)
Course Description: Late 18th and early 19th century harmonic and
formal language; diatonic, chromatic, and modal sight singing, ear
training, and keyboard harmony skills.
Prerequisite: MU 217.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 225  Jazz Theory  Credits: 2 (2-0-0)
Course Description: Music theory as it pertains to the jazz idiom; the
aural language of jazz.
Prerequisite: MU 118.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 230  Music of Black Americans  Credits: 3 (3-0-0)
Course Description: Music indigenous to or composed by Black
Americans.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 231  Women in Music  Credits: 3 (3-0-0)
Course Description: Examination of the role of women in music from
historical and societal perspectives.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 241  Introduction to Music Therapy  Credits: 3 (3-0-0)
Course Description: Overview of music therapy, related helping
professions, and problems in human functioning; emphasizes basic skills
for managing behavior problems.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 250  Music Therapy Practice  Credits: 3 (2-2-0)
Course Description: Development of fundamental interactive and
professional skills used in music therapy practice.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 251  Voice Techniques  Credit: 1 (0-2-0)
Course Description: Basic voice production, exercises, materials and
methods for teaching, including child and adolescent voice concerns.
Prerequisite: None.
Registration Information: Instrumental music education majors only.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 252A  Instrumental Techniques: Brass  Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials,
and teaching methods for brass instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252B  Instrumental Techniques: Woodwinds  Credits: 2 (1-2-0)
Course Description: Tone production, tuning, fingerings, care, materials,
and teaching methods for woodwind instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252C  Instrumental Techniques: Strings  Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials,
and teaching methods for string instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 252D  Instrumental Techniques: Percussion  Credit: 1 (0-2-0)
Course Description: Tone production, tuning, fingerings, care, materials,
and teaching methods for percussion instruments.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 254  Beginning Conducting  Credits: 2 (2-0-0)
Course Description: Basic conducting patterns and techniques.
Prerequisite: MU 117.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272A  Applied Music Instruction: Euphonium  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272B  Applied Music Instruction: French Horn  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272C  Applied Music Instruction: Trombone  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272D  Applied Music Instruction: Trumpet  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272E  Applied Music Instruction: Tuba  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272F  Applied Music Instruction: Harpsichord  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272H  Applied Music Instruction: Organ  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272J  Applied Music Instruction: Percussion  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272K  Applied Music Instruction: Guitar  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272L  Applied Music Instruction: Harp  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272N  Applied Music Instruction: Viola  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272O  Applied Music Instruction: Violin  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272P  Applied Music Instruction: Violoncello  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272Q  Applied Music Instruction: Voice  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272R  Applied Music Instruction: Bassoon  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272S  Applied Music Instruction: Clarinet  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 272T  Applied Music Instruction: Flute  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 272U  Applied Music Instruction: Oboe  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: None.
Registration Information: Concurrent registration in any music ensemble. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274A  Applied Jazz Instruction: Piano  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 274B  Applied Jazz Instruction: String Bass  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 274C  Applied Jazz Instruction: Trombone  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274D  Applied Jazz Instruction: Trumpet  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274E  Applied Jazz Instruction: Percussion  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274F  Applied Jazz Instruction: Saxophone  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 274G  Applied Jazz Instruction: Guitar  Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering jazz improvisation and style, including articulation and phrasing.
Prerequisite: None.
Registration Information: Written consent of instructor. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 286  Practicum-Introduction to Music Education  Credits: 3 (1-0-4)
Course Description: 
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 300  Women's Chorus  Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of a variety of types and styles of music for women's voices.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 302  University Orchestra  Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of standard orchestral literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 304  Symphonic Band  Credit: 1 (0-3-0)
Course Description: Preparation for public performance of full symphonic instrumentation of concert band literature.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 305  Colorado State University Concert Choir  Credit: 1 (0-5-0)
Course Description: Rehearsal and performance of choral literature emphasizing extended works with orchestral accompaniment.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 309  Jazz Ensemble  Credit: 1 (0-3-0)
Course Description: Rehearsal and performance of jazz ensemble literature of standard and experimental types.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 310  Jazz Combo  Credit: 1 (0-2-0)
Course Description: Small group jazz performance practice and standard jazz repertoire.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 317  Music Theory V  Credits: 2 (1-2-0)
Course Description: Late 19th and 20th century systems of composition and analysis; chromatic, modal, and atonal sight singing, ear training, and keyboard harmony skills.
Prerequisite: MU 218.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MU 318 Arranging and Orchestration Credits: 2 (2-0-0)
Course Description: Techniques for writing music for the standard orchestral and band instruments; basic arranging skills for various instrumental and choral ensembles.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 320 Jazz Improvisation Credit: 1 (0-2-0)
Course Description: Jazz improvisation skills through training in jazz theory, ear training, and improvisatory concepts.
Prerequisite: MU 225.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 325 Jazz Composition/Arranging Credits: 2 (2-0-0)
Course Description: Arranging jazz music for a variety of ensembles; composition of music in the jazz idiom.
Prerequisite: MU 225.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 332 History of Jazz Credits: 3 (3-0-0)
Course Description: Jazz since the 1880s emphasizing its various influences and developments.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 333 History of Rock and Roll Credits: 3 (3-0-0)
Course Description: Historical overview of rock and roll with emphasis on listening skills, musical analysis, the artists, and the industry.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 334 Music History I Credits: 3 (3-0-0)
Course Description: Music of the medieval, Renaissance, and baroque periods.
Prerequisite: (MU 118) and (MU 131).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 335 Music History II Credits: 3 (3-0-0)
Course Description: Music of the classical, Romantic, and contemporary periods.
Prerequisite: MU 118 or MU 131.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 338 Opera History and Literature Credits: 2 (2-0-0)
Course Description: Historical and musical development of opera from its roots through the 20th century.
Prerequisite: MU 131.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 342 Psychology of Music Credits: 3 (3-0-0)
Course Description: Psychological aspects of music: perception, psychoacoustics, aesthetics, musical function, communication, measurement, and affective responses.
Prerequisite: PSY 100.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 343 Research Methods in Music Therapy Credits: 3 (3-0-0)
Course Description: Techniques of observing, measuring, and recording behavior. Basic experimental methods and procedures used in music therapy research.
Prerequisite: STAT 201.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351A String Pedagogy I: Violin/Viola. Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351B String Pedagogy I: Violoncello Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 351C String Pedagogy I: String Bass Credits: 2 (2-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352A String Pedagogy II: Violin/Viola Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351A.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352B String Pedagogy II: Violoncello Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351B.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 352C String Pedagogy II: String Bass Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 351C.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 355  Choral Conducting and Literature  Credits: 2 (1-2-0)
Course Description: Basic techniques of choral conducting and analysis of selected works as an aid to interpretation.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 356  Instrumental Conducting and Literature  Credits: 2 (1-2-0)
Course Description: Essentials of instrumental conducting and analysis of selected works.
Prerequisite: MU 254.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365A  Advanced Diction: Italian and English  Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 365B  Advanced Diction: French and German  Credit: 1 (0-2-0)
Course Description: Practical application of lyric diction through performance of art song and arias.
Prerequisite: MU 172A and MU 172B.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 400  Colorado State University Chamber Choir  Credit: 1 (0-5-0)
Course Description: Performance of chamber choral literature from all musical periods ranging from madrigals to music in a contemporary idiom.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 401  Opera Theater  Credits: Var[1-2] (0-0-0)
Course Description: Performance of opera and/or operatic scenes emphasizing operatic singing and acting techniques.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 402  Theater/Chamber Orchestra  Credit: 1 (0-5-0)
Course Description: Performance of selected operas, musicals, oratorio, orchestral accompaniments, and chamber music.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 404  Symphonic Wind Ensemble  Credit: 1 (0-5-0)
Course Description: Performance of wind ensemble and band literature emphasizing most challenging of repertoire, using a select ensemble of performers.
Prerequisite: None.
Registration Information: Audition required for this ensemble.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 407  Accompanying  Credit: 1 (0-3-0)
Course Description: Practical experience in the interpretation and execution of piano accompaniments.
Prerequisite: MU 272I.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 408  Chamber Music  Credit: 1 (0-3-0)
Course Description: Performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 415  Advanced Jazz Techniques  Credits: 2 (1-2-0)
Course Description: Advanced jazz theory and rhythmic concepts, free improvisation and other modern performance techniques.
Prerequisite: MU 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 417  Counterpoint  Credits: 3 (3-0-0)
Course Description: Contrapuntal techniques from the Middle Ages through the 20th century; development of compositional skills in counterpoint.
Prerequisite: MU 218.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 418  Advanced Orchestration  Credits: 2 (2-0-0)
Course Description: Advanced writing for modern orchestra and related ensembles; advanced study of traditional and contemporary writing for the individual instruments.
Prerequisite: MU 318.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 419  Electronic Music Composition  Credits: 2 (2-0-0)
Course Description: Fundamentals of electronic music composition, including hardware, software, digital audio, MIDI, and computer music.
Prerequisite: MU 218.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 420 Marching Band Techniques  Credits: 2 (2-0-0)
Course Description: Marching band conducting, design, and performance techniques.
Prerequisite: MU 204.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 421 Orchestral Techniques  Credits: 2 (1-3-0)
Course Description: Orchestral conducting and rehearsal techniques.
Prerequisite: MU 252C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 425 Jazz Pedagogy  Credits: 2 (2-0-0)
Course Description: Jazz ensemble, instrumentation, literature, performance practice and rehearsal techniques.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 430 20th Century Music  Credits: 3 (3-0-0)
Course Description: Musical styles from 1900 to present; major 20th-century movements which reflect a changing society.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 431 American Music  Credits: 3 (3-0-0)
Course Description: Sacred, patriotic, popular, and cultivated musical developments from the Pilgrims to 1900 including music on the Western frontier.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 432 Hymnology  Credits: 2 (2-0-0)
Course Description: Hymns and congregational singing in the Christian tradition.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 433 Music and Rites of Christian Liturgy  Credits: 2 (2-0-0)
Course Description: History of the music and rites of Christian liturgy from its beginnings to the present.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 434 Psalms in Music and Liturgy  Credits: 2 (2-0-0)
Course Description: Musical traditions of the poetry and psalms of the Hebrew Bible, primarily from the perspective of Jewish and Christian liturgy.
Prerequisite: MU 100 or MU 131.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 435 Contemporary Liturgical Music in America  Credits: 2 (2-0-0)
Course Description: History and practice of contemporary liturgical music in America.
Prerequisite: MU 100 or MU 131.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 437 History and Structure of the Organ  Credits: 2 (1-2-0)
Course Description: Physical structure, tonal disposition, acoustical surroundings, and historical development.
Prerequisite: MU 472H.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 440 Music Therapy Methods I  Credits: 3 (3-0-0)
Course Description: Basic characteristics of handicapped children encountered in the music classroom; methods and materials for educating them in music.
Prerequisite: MU 241.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 443 Music Therapy Methods II  Credits: 3 (3-0-0)
Course Description: Relation of music to health; current and future music therapy scenes; and emphasis on cognitive, affective, and psychomotor approaches to therapy.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 444 Music Therapy Methods III  Credits: 3 (3-0-0)
Course Description: Music therapy techniques: assessment, formulating objectives, designing and implementing programs, evaluation, problem solving, and creativity.
Prerequisite: BMS 300 and MU 241.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 445 Improvisation Techniques in Music Therapy  Credits: 2 (2-0-0)
Course Description: Music/movement improvisation techniques with clinical populations.
Prerequisite: None.
Registration Information: Admission to professional curriculum.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451A String Pedagogy III: Violin  Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 451B  String Pedagogy III: Violoncello  Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352B.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 451C  String Pedagogy III: String Bass  Credits: 2 (1-2-0)
Course Description:
Prerequisite: MU 352C.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 463  Chamber Music Literature  Credits: 2 (2-0-0)
Course Description: Chamber music literature from 1750 to present.
Prerequisite: MU 335.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 464A  String Literature: Violin/Viola  Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272N or MU 272O.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464B  String Literature: Violoncello  Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272P.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 464C  String Literature: String Bass  Credits: 2 (2-0-0)
Course Description:
Prerequisite: MU 272M.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 465  Keyboard Literature  Credits: 2 (1-2-0)
Course Description: Survey of early keyboard literature from pre-piano to early Romantic period; problems in present-day performance.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 466  Song Literature  Credits: 2 (1-2-0)
Course Description: Development of song as an art form from monody to German Lieder, French school, and contemporary songs of England and America.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 467  Vocal Pedagogy  Credits: 2 (2-0-0)
Course Description: Pedagogical foundations, techniques, resources, methods, and terminology for teaching singing.
Prerequisite: MU 265A and MU 265B.
Registration Information: Must have concurrent registration in MU 472Q.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 468  Organ Literature  Credits: 2 (1-2-0)
Course Description: Survey of literature from earliest known works to present; stylistic content and interpretation.
Prerequisite: MU 437.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 469  Instrumental Literature  Credits: 2 (1-2-0)
Course Description: Survey of literature for string, woodwind, and brass ensembles.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 471  Recital  Credit: 1 (0-0-1)
Course Description: Demonstration of individual musical proficiency through public performance.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472A  Applied Music Instruction: Euphonium  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272A.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472B  Applied Music Instruction: French Horn  Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272B.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 472C Applied Music Instruction: Trombone Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272C.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472D Applied Music Instruction: Trumpet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272D.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472E Applied Music Instruction: Tuba Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272E.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472F Applied Music Instruction: Harpsichord Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272F.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472G Applied Music Instruction: Organ Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272G.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472H Applied Music Instruction: Harp Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272H.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472I Applied Music Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272I.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472J Applied Music Instruction: Percussion Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272J.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472K Applied Music Instruction: Guitar Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272K.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472L Applied Music Instruction: Harp Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272L.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472M Applied Music Instruction: String Bass Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272M.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 472N Applied Music Instruction: Viola Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272N.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472O Applied Music Instruction: Violin Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272O.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472P Applied Music Instruction: Violoncello Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272P.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472Q Applied Music Instruction: Voice Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272Q.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472R Applied Music Instruction: Bassoon Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272R.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472S Applied Music Instruction: Clarinet Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272S.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472T Applied Music Instruction: Flute Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272T.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472U Applied Music Instruction: Oboe Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272U.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 472V Applied Music Instruction: Saxophone (Alto) Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class, emphasizing pedagogical methods.
Prerequisite: MU 272V.
Registration Information: Concurrent registration in any music ensemble; successful completion of upper-division qualifying exam. May be repeated up to 9 times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 473 Composition Instruction Credits: Var[1-2] (0-0-0)
Course Description: One or two half-hour lessons per week; emphasizing pedagogical methods.
Prerequisite: MU 273.
Registration Information: Must have successful completion of upper-division qualifying exam.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 474 Applied Jazz Instruction Credits: Var[1-2] (0-0-0)
Course Description: Private jazz instruction covering advanced aspects of jazz improvisation and performance.
Prerequisite: MU 274A to 274G.
Registration Information: MU 274 (any one subtopic); concurrent registration in any jazz ensemble; successful completion of upper division qualifying exam.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 486A Practicum: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Piano proficiency.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 486B Practicum: Music Education  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to teacher licensure.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Six-month field experience that students must complete to become eligible for registration and board certification.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
MU 495A Independent Study: Composition and Theory  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 495B Independent Study: Conducting  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 495C Independent Study: Improvisation  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 495D Independent Study: Music History  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 495E Independent Study: Music Literature  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 495F Independent Study: Music Therapy  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 495G Independent Study: Pedagogy  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 495H Independent Study: Performance  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496A Group Study: Composition and Theory  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496B Group Study: Conducting  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496C Group Study: Improvisation  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496D Group Study: Music Education  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496E Group Study: Music History  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496F Group Study: Music Literature  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496G Group Study: Music Therapy  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496H Group Study: Pedagogy  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 496I Group Study: Performance  Credits: Var[1-3] (0-0-0)
Prerequisite: None.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 498 Research in Music Therapy  Credits: Var[1-3] (0-0-0)
Course Description: Participation of undergraduate music therapy majors in departmental research projects.
Prerequisite: MU 241 and MU 286.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 499 Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Music majors only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
MU 510 Foundations of Music Education  Credits: 3 (3-0-0)
Course Description: Cultural, philosophical, psychological, and historical applications of music education.
Prerequisite: MU 630 or EDRM 600.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MU 517 Analytic Techniques I  Credits: 2 (2-0-0)
Course Description: Appropriate analytic techniques for Middle Ages, Renaissance, and baroque music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination.
Term Offered: Fall.  
Grade Mode: Traditional.
Special Course Fee: No.
MU 518 Analytic Techniques II  Credits: 3 (3-0-0)
Course Description: Appropriate analytic techniques for classical, Romantic, and 20th-century music.
Prerequisite: None.
Registration Information: Satisfactory completion of placement examination. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 519 History of Music Theory  Credits: 3 (3-0-0)
Course Description: Important authors, treatises, and texts dealing with acoustics, composition, counterpoint, harmony, notation, orchestration, thoroughbass, and tuning.
Prerequisite: MU 317.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 520 Elementary School Music  Credits: 3 (3-0-0)
Course Description: Musical concepts and teaching strategies for grades K-6; contemporary influences on music education.
Prerequisite: EDUC 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MU 521 Junior and Senior High School Music  Credits: 3 (3-0-0)
Course Description: Music for grades 7-12. General music classes, choral and instrumental organizations, common problems, practices, and new concepts.
Prerequisite: EDUC 450.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 524 Dalcroze Eurhythmics. Level I  Credits: 3 (1-4-0)
Course Description: Musicianship, aesthetics, and pedagogy as studied through the body via movement and gesture.
Prerequisite: None.
Registration Information: Admission to the M.M. Music Education specialization.
Term Offered: Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
MU 525A Orff-Schulwerk Training Program: I  Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MU 525B Orff-Schulwerk Training Program: II  Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MU 525C Orff-Schulwerk Training Program: III  Credits: 3 (1-0-2)
Course Description:
Prerequisite: MU 590L.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MU 526A Kodaly Training Program: Level I  Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MU 526B Kodaly Training Program: Level II  Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
MU 526C  Kodaly Training Program: Level III  Credits: 5 (2-2-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for lecture, laboratory and recitation.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 527A  Conducting Seminar: Level I  Credits: 4 (0-0-4)
Course Description: Music score analysis, preparation and conducting problems; various conducting projects to sharpen skills and increase gestures.
Prerequisite: None.
Registration Information: Audition and acceptance into the graduate school. Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527B  Conducting Seminar: Level 2  Credits: 4 (0-0-4)
Course Description: Furthers techniques learned in MU 527A; focuses on rehearsal techniques, performance practice, and asymmetrical meters.
Prerequisite: MU 527A.
Registration Information: Required field trips.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 527C  Conducting Seminar: Level 3  Credits: 4 (0-0-4)
Course Description: Furthers study from MU 527A-B. Recitative technique through both operatic and choral examples; final project is a group conducted Broadway musical.
Prerequisite: MU 527B.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

MU 530  Music Through the Middle Ages  Credits: 3 (3-0-0)
Course Description: Music in Western civilization from its beginnings through Middle Ages.
Prerequisite: MU 334.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 531  Music of the Renaissance  Credits: 3 (3-0-0)
Course Description: Music of 15th and 16th centuries.
Prerequisite: MU 334.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 532  Music of the Baroque  Credits: 3 (3-0-0)
Course Description: Style and musical language of baroque from Gabrielli's through Johann Sebastian Bach.
Prerequisite: MU 334.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 533  Music of the Classical Era  Credits: 3 (3-0-0)
Course Description: Vocal and instrumental music of middle and late 18th century.
Prerequisite: MU 335.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 534  Music of the Romantic Era  Credits: 3 (3-0-0)
Course Description: Musical works, philosophies, and related arts of 19th century.
Prerequisite: MU 335.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 535  Contemporary Music  Credits: 3 (3-0-0)
Course Description: 20th-century music emphasizing stylistic and theoretical concepts.
Prerequisite: MU 430.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 543  Advanced Research Methods in Music Therapy  Credits: 3 (3-0-0)
Course Description: Research techniques used in measuring and recording behavior. Advanced methods used in music therapy research.
Prerequisite: MU 241 and MU 250.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 544  Advanced Techniques-Neurologic Music Therapy  Credits: 3 (3-0-0)
Course Description: Advanced neurologic music therapy techniques used with various clinical populations.
Prerequisite: BMS 300 and MU 241 and MU 250.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 545  Composition for Music Therapy Practitioners  Credits: 3 (2-2-0)
Course Description: Music composition techniques for the music therapy clinician.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 555  Choral Techniques, Style, and Interpretation  Credits: 3 (3-0-0)
Course Description: Techniques for achieving expressive conducting, problems of tone and diction, musical style and interpretation, and rehearsal techniques.
Prerequisite: MU 355.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
MU 556 Advanced Instrumental Conducting and Techniques Credits: 3 (3-0-0)
Course Description: Score reading and analysis, preparation of instrumental scores for performance; expressive baton techniques, rehearsal methods and procedures.
Prerequisite: MU 356.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 557 Advanced Vocal Pedagogy Credits: 2 (2-0-0)
Course Description: Diagnosis of vocal faults and introduction to performance anxiety barriers and peak performance tactics.
Prerequisite: MU 467.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 564 Collaborative Piano Literature Credits: 3 (3-0-0)
Course Description: Literature and historical performance practices of collaborative piano music.
Prerequisite: None.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

MU 565 Piano Literature-1800 to Present Credits: 2 (2-0-0)
Course Description: Keyboard music representing Romantic and Impressionistic periods, nationalism, twelve-tone, and recent developments including aleatory elements.
Prerequisite: MU 465.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 566 Choral Literature-Renaissance and Baroque Credits: 2 (2-0-0)
Course Description: Analytical and comparative survey of choral literature from Renaissance to 1750.
Prerequisite: MU 355.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 567 Choral Literature-1750 to Present Credits: 2 (2-0-0)
Course Description: Analytical and comparative survey of choral literature from 1750 to present.
Prerequisite: MU 356.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 569 Symphonic Literature Credits: 2 (1-2-0)
Course Description: Symphonic development from early classicism through Impressionism; emphasis on formal structure, thematic sources, and social and historical influence.
Prerequisite: MU 469.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 590A Workshop: Choral Music Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590B Workshop: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590C Workshop: Beginning Guitar Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590D Workshop: Humanities Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590E Workshop: Music for Exceptional Children Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590F Workshop: Organ Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590G Workshop: Orff Music Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590I Workshop: Kodaly Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590J Workshop: Beginning Handbells Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 590K Workshop: Computers in Music Education  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590L Workshop: Advanced Handbells  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 590N Workshop: Neurologic Music Therapy  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 608 Graduate Chamber Music  Credit: 1 (0-3-0)
Course Description: Graduate-level performance literature for small instrumental ensembles: duets, trios, quartets, and quintets.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing; audition required.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 630 Methods of Music Research  Credits: 3 (3-0-0)
Course Description: Research, documentation, and bibliography for music history, literature, performance, theory, acoustics, music education, and quantitative testing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

MU 647 Historical Foundations of Music Therapy  Credits: 3 (3-0-0)
Course Description: Historical foundations of music therapy in the United States from 1750 to the present.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 648 Neuroscience/Music Foundations in Therapy  Credits: 3 (3-0-0)
Course Description: Historical and scientific foundations of neurologic music therapy.
Prerequisite: MU 544.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 649 Advanced Practice in Music Therapy  Credits: 3 (0-0-3)
Course Description: Group study of advanced music therapy techniques.
Prerequisite: None.
Registration Information: Admission to the Graduate School. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

MU 669 Instrumental Literature  Credits: 2 (2-0-0)
Course Description: Solo and small ensemble literature for string, woodwind, and brass instruments.
Prerequisite: MU 469.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 671 Graduate Recital  Credit: 1 (0-0-1)
Course Description: Demonstration of graduate-level applied musical proficiency through public performance.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672A Applied Music Instruction: Euphonium  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472A.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672B Applied Music Instruction: French Horn  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672C Applied Music Instruction: Trombone  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472C.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672D Applied Music Instruction: Trumpet  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472D.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 672E  Applied Music Instruction: Tuba  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472E.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672G  Applied Music Instruction: Harpsichord  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472G.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672H  Applied Music Instruction: Organ  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472H.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672I  Applied Music Instruction: Piano  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472I.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672J  Applied Music Instruction: Percussion  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472J.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672K  Applied Music Instruction: Guitar  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472K.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672L  Applied Music Instruction: Harp  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472L.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672M  Applied Music Instruction: String Bass  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472M.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672N  Applied Music Instruction: Viola  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472N.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672P  Applied Music Instruction: Violoncello  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472P.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672Q  Applied Music Instruction: Voice  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472Q.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672R  Applied Music Instruction: Bassoon  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472R.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672S  Applied Music Instruction: Clarinet  Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472S.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
MU 672T Applied Music Instruction: Flute Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472T.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672U Applied Music Instruction: Oboe Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472U.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 672V Applied Music Instruction: Saxophone (Alto) Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week and one hour weekly performance class.
Prerequisite: MU 472V.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 673 Composition Instruction Credits: Var[2-3] (0-0-0)
Course Description: One or two half-hour lessons per week.
Prerequisite: MU 473.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised assistance in instruction.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 686 Music Therapy Practicum Credits: 3 (0-6-0)
Course Description: Clinical practicum for graduate music therapy students.
Prerequisite: MU 486A - at least 6 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

MU 692 Seminar Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695A Independent Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695B Independent Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695C Independent Study: Improvisation Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695D Independent Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695E Independent Study: Music History Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695F Independent Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695G Independent Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 695H Independent Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
MU 696A Group Study: Composition and Theory Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696B Group Study: Conducting Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696C Group Study Improvisation Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696D Group Study: Music Education Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696E Group Study: Music History Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696F Group Study: Music Literature Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696G Group Study: Music Therapy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696H Group Study: Pedagogy Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 696I Group Study: Performance Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 698 Research Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

MU 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Natural Resources-NR (NR)

Courses
NR 120A Environmental Conservation (GT-SC2) Credits: 3 (3-0-0)
Course Description: Overview of natural resources environmental concerns including population, pesticides, energy, and pollution.
Prerequisite: None.
Registration Information: Credit not allowed for both NR 120A and NR 120B. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

NR 120B Environmental Conservation Credits: 4 (3-3-0)
Course Description: Overview of natural resources environmental concerns including population, pesticides, energy, and pollution.
Prerequisite: None.
Registration Information: Participation in the University Honors Program required. Must register for lecture and laboratory. Credit not allowed for both NR 120B and NR 120A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 130 Global Environmental Systems (GT-SC2) Credits: 3 (3-0-0)
Course Description: Studies of the Earth’s lithosphere, hydrosphere, atmosphere, and biosphere systems and their interrelations with human dimensions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).
NR 150 Oceanography (GT-SC2) Credits: 3 (3-0-0)
Course Description: Introduction to the geology, physics, chemistry, and biology of the world ocean; oceanic relationships with various human dimensions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

NR 192 First Year Seminar in Environmental Studies Credits: 2 (0-0-2)
Course Description: Introduction to the disciplines involved in natural resources through exposure to current issues.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 193 FRS First Year Seminar Credit: 1 (0-0-1)
Course Description: A first year seminar for all new Forest and Rangeland Stewardship students, both transfer and freshmen.
Prerequisite: None.
Registration Information: Must be enrolled in one of the following majors: Forestry, Natural Resources Management or Rangeland Ecology. This is a partial semester course. Required field trips.
Term Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NR 220 Natural Resource Ecology and Measurements Credits: 5 (2-6-0)
Course Description: Ecology of Rocky Mountains ecosystems. Basic measurements and integrated management of natural resources.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 103) and (MATH 118 or MATH 141 to 161 or MATH 229 to 499).
Registration Information: Required residence at Pingree Park Campus. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

NR 300 Biological Diversity Credits: 3 (3-0-0)
Course Description: Biological diversity examined in context of species; extinction. Principles, techniques of conservation biology utilized to understand and resolve issues.
Prerequisite: NR 120A or NR 120B or BZ 100 to 499 - at least 1 course or LIFE 100 to 499 - at least 1 course.
Registration Information: Credit allowed for only one of the following courses: NR 300 or FW 455.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 310 Ecosystem Services and Human Well-Being Credits: 3 (3-0-0)
Course Description: Life-supporting and life-fulfilling benefits that nature provides to humans; theory, case studies, and policy.
Prerequisite: AREC 202 or ECON 202 or LAND 220 or LIFE 220 or ESS 211.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 319 Geospatial Applications in Natural Resources Credits: 4 (2-4-0)
Course Description: Introduction to global positioning systems (GPS), geographic information systems (GIS) and remote sensing (RS) with natural resource applications.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 320 Natural Resources History and Policy Credits: 3 (3-0-0)
Course Description: History, values and institutions, and policy process guiding natural resources management and conservation.
Prerequisite: None.
Restriction: Must register for lecture and laboratory. Credit not allowed for both NR 322 and GR 420.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 323 Remote Sensing and Image Interpretation Credits: 3 (2-2-0)
Also Offered As: GR 323.
Course Description: Remote sensing systems and applications; characteristics of photographic, scanner and radar images; imagery interpretation.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: NR 323, NR 503, GR 323, GR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 326 Forest Vegetation Management Credits: 3 (3-0-0)
Course Description: Ecologically-based management to restore and manage forests.
Prerequisite: NR 220.
Registration Information: Credit not allowed for both NR 326 and F 325.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 330 Human Dimensions in Natural Resources Credits: 3 (3-0-0)
Course Description: Social, political, cultural, and economic considerations in natural resource management.
Prerequisite: NR 120A or NR 120B.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
NR 353  Global Change Ecology, Impacts and Mitigation  Credits: 3 (3-0-0)
Also Offered As: BZ 353.
Course Description: Ecological impacts of human-induced global change, and the strategies that can/are being used to adapt to and mitigate these impacts.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both NR 353 and BZ 353.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 355  Contemporary Environmental Issues  Credits: 3 (3-0-0)
Course Description: Fundamental concepts of energy, population, and ecology applied to range of contemporary environmental issues.
Prerequisite: BIO 100 to 481 - at least 1 course or BZ 100 to 481 - at least 1 course or LIFE 100 to 481 - at least 1 course.
Registration Information: Written consent of instructor can substitute for biology course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 365  Environmental Education  Credits: 3 (3-0-0)
Course Description: Principles of interpretation related to natural resource management and public informal education.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 367  Concepts in Vertebrate Nutrition  Credits: 3 (3-0-0)
Course Description: Concepts in suborganismal and organismal vertebrate nutrition; introduction to nutritional ecology.
Prerequisite: CHEM 245.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 370  Coastal Environmental Ecology  Credits: 3 (3-0-0)
Course Description: Sensitive and complex coastal area environments and the effects of accelerated change on and offshore caused by human activities.
Prerequisite: CHEM 107 or CHEM 113.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 375  Environment and Natural Resources Leadership  Credit: 1 (1-0-0)
Course Description: Environment and natural resources leadership history, skills, and styles. Creation of leadership path and organization prescriptions.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 380  Spatial Analysis of Social Data  Credits: 3 (2-2-0)
Course Description: Spatial analysis and analysis of socio-economic data; common themes related to land use and landscape change, parks & protected areas, and global tourism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 382A  Travel Abroad: Social-Ecological Field Methods in Kenya  Credits: 5 (0-0-5)
Course Description: Social and ecological field methods commonly used in natural resource management.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 103) and (MATH 118 or MATH 141 to 161 - at least 1 course or MATH 229 to 9999 - at least 1 course).
Registration Information: Study Abroad in Kenya.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 382B  Travel Abroad: Social-Ecological Field Methods in Belize  Credits: 5 (0-0-5)
Course Description: Social and ecological field methods commonly used in natural resource management.
Prerequisite: (BZ 110 and BZ 111 or BZ 120 or LIFE 103) and (MATH 118 or MATH 141 to 161 - at least 1 course or MATH 229 to 9999 - at least 1 course).
Registration Information: Study Abroad in Belize.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 383  U.S. Travel-Integrated Resource Management  Credits: 2 (0-2-1)
Also Offered As: AGRI 383.
Course Description: Evaluation of integrated ranch management decision alternatives in conjunction with professional resource managers.
Prerequisite: None.
Registration Information: Must register for laboratory and recitation. Credit not allowed for both NR 383 and AGRI 383. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 387  Internship I  Credit: 1 (0-0-1)
Course Description: Preparation for field experience in natural resource management.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 400  Public Relations in Natural Resources  Credits: 3 (2-0-1)
Course Description: Effective public relations and public information programs applicable to natural resource professions.
Prerequisite: NR 320.
Registration Information: Junior standing. Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 401  Techniques in Public Relations  Credits: 2 (0-4-0)
Course Description: Effective communications methods related to natural resource professions; preparation of graphics, organization of programs using slide show format.
Prerequisite: SPCM 200.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NR 420 Integrated Ecosystem Management Credits: 4 (3-3-0)
Also Offered As: GR 420.
Course Description: Natural resource management exercises; quantitative integration techniques, group dynamics.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320) and (NR 220) and (NR 319 or NR 322) and (NR 320).
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 421 Natural Resources Sampling Credits: 3 (3-0-0)
Course Description: Designs, techniques, problems in sampling natural resource populations; analysis, interpretation of data.
Prerequisite: (STAT 201 or STAT 301) and (NR 220).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 422 GIS Applications in Natural Resource Management Credits: 4 (2-4-0)
Course Description: Development and implementation of GIS projects and problems in spatial data analysis.
Prerequisite: NR 322 or NR 319.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 423 Applications of Global Positioning Systems Credit: 1 (.5-1-0)
Course Description: Introduction to concepts and use of global positioning systems with applications to natural resources.
Prerequisite: NR 322 or NR 505.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 425 Natural Resource Policy and Sustainability Credits: 3 (3-0-0)
Course Description: Principles, concepts, and operating examples of sustainable resource management with a concentration on forest policies and practices.
Prerequisite: NR 320.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 432 Foundations of National Forest Lands Program Credit: 1 (0-0-1)
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 433 Special Uses Management Credits: 4 (0-0-4)
Course Description: Authorities, application, and administration; agriculture, aviation, community, public information, industrial, water, treasure trove, and cultural uses.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 434 Linear Uses and FERC Licenses Credits: 3 (0-0-3)
Course Description: Rights-of-way authorities and management; road and trail grants and easements; communication uses; Federal Energy Regulatory Commission licenses.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 435 Valuation and Landownership Adjustment Credits: 5 (0-0-5)
Course Description: Authorities, coordination, valuation, title; land purchase, donation, exchange, interchange, transfers, sales, condemnation, and negotiation.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 436 Right-of-Way Acquisition Credits: 3 (0-0-3)
Course Description: Need, authority, policy, planning, acquiring, negotiating, and managing rights-of-way; cost-share agreements.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 437 Boundaries, Status, Claims, and Withdrawals Credits: 3 (0-0-3)
Course Description: Administration of landownership status, title encumbrances, withdrawals, title claims, Native American rights and claims, property boundary management.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 440 Applications in Conservation Planning Credits: 3 (2-0-1)
Course Description: Conservation planning method applications that integrate natural resources by conservation organizations and government agencies.
Prerequisite: NRRT 340.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
NR 444 Fire Economics and Policy Credits: 3 (3-0-0)
Course Description: Development of wildlife and fuel management economics integrated with critical federal policies.
Prerequisite: ECON 202 or AREC 202.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 460 Wilderness Management Credits: 3 (3-0-0)
Course Description: Management of wilderness in the U.S. National Wilderness Preservation System and equivalent international wildlands.
Prerequisite: (LAND 220 or LIFE 220) and (NR RT 231).
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 479 Restoration Case Studies Credits: 2 (0-2-1)
Course Description: Analysis of ecological restoration projects.
Prerequisite: (LAND 220 or LIFE 220 or LIFE 320) and (F 311 or NR 326 or RS 300).
Registration Information: Written consent of instructor required. Field trips occur one week prior to first day of semester. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NR 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 492 Seminar on Environmental Conservation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 493 Seminar on GIS and Remote Sensing Applications Credit: 1 (0-0-1)
Course Description: Techniques, use of remote sensing, GIS technologies for forest, range, wildlife, water, geology, recreation, and other resource management applications.
Prerequisite: NR 322 or NR 323.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NR 501 Leadership and Public Communications Credits: 3 (0-0-3)
Course Description: Two-way communication skills used to involve publics, write for various media, and understand role of leadership within natural resources profession.
Prerequisite: (NR 100 to 481 - at least 1 course) and (CO 100 to 481 - at least 1 course or JTC 100 to 481 - at least 1 course or SPCM 100 to 481 - at least 1 course).
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 504 Computer Analysis of Remote Sensing Data Credits: 4 (2-6-0)
Course Description: Computer-aided analysis techniques for extracting resource information from aerial and satellite remote sensing data.
Prerequisite: NR 323 or NR 503.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: NR 503, NR 323, GR 323, GR 503.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 505 Concepts in GIS Credits: 4 (2-4-0)
Course Description: Concepts of geographic information systems and spatial data analysis.
Prerequisite: STAT 301 or STAT 511.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 506 GIS Methods for Resource Management Credits: 4 (2-4-0)
Course Description: Current methods in applied geographic information systems and spatial data analysis.
Prerequisite: NR 505.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 510 Ecosystem Services: Theory and Practice Credits: 3 (3-0-0)
Course Description: Theory and application of ecosystem services drawing upon ecological, economic, and institutional analysis.
Prerequisite: AREC 540 or ECON 540 or AREC 541 or ECON 541 or ECOL 505 or FW 555.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NR 512 Spatial Statistical Modeling-Natural Resources Credits: 3 (3-0-0)
Course Description: Statistical techniques used to model natural and environmental resources; GIS, remote sensing, and spatial statistics.
Prerequisite: STAT 301 and NR 322 and NR 323.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 515 Natural Resources Policy and Biodiversity Credits: 3 (0-0-3)
Course Description: Review evolution of natural resource policy, administration, and law emphasizing interdisciplinary concept of managing for biodiversity.
Prerequisite: POLS 100 to 481 - at least 1 course and NR 100 to 281 - at least 1 course.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 520 Applied Optimization in Resource Management Credits: 3 (3-0-0)
Course Description: Design optimization models to integrate economics, ecology, and social concerns in natural resource management.
Prerequisite: (MATH 141 or MATH 155 or MATH 160 to 161 - at least 1 course or MATH 255 or MATH 261) and (ECON 100 to 481 - at least 1 course).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 521 Natural Resource Administration Credits: 2 (2-0-0)
Course Description: Administration of forest and natural resource projects in developed and developing countries.
Prerequisite: NR 320.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

NR 522 Wilderness Ecosystem Planning Credits: 3 (0-6-0)
Course Description: Expertise developed in preparing effective implementation plans for park and wilderness ecosystems.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 523 Quantitative Spatial Analysis Credits: 3 (3-0-0)
Also Offered As: STAT 523.
Course Description: Techniques in spatial analysis: point pattern analysis, spatial autocorrelation, trend surface and spectral analysis.
Prerequisite: ERHS 307 or STAT 301 or STAT 307.
Registration Information: Credit not allowed for both NR 523 and STAT 523.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 525 World Natural Resources Credits: 3 (3-0-0)
Course Description: Interdisciplinary approach to overview global problems and solutions in natural resources.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 526 Techniques for Ecosystem Management Credits: 4 (4-0-0)
Course Description: Assessing the biophysical and sociopolitical environment and decision-making techniques used in ecosystem management.
Prerequisite: None.
Registration Information: Enrollment in Continuing Education in Ecosystem Management (CEEM) program. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 527 Methods-Human Dimensions of Natural Resources Credits: 3 (2-0-1)
Course Description: Human dimensions research in areas of problem identification, research process, survey methods, sampling, validity and reliability.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program. Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 528 Analysis: Human Dimensions-Natural Resources Credits: 3 (2-2-0)
Course Description: Human dimensions analysis techniques: codebook development and data entry, univariate statistics, and bivariate/multivariate statistics.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program. Must register for lecture and laboratory.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 529 Concepts: Human Dimensions-Natural Resources Credits: 2 (2-0-0)
Course Description: Concepts guiding human dimensions research: motivations/satisfactions, attitudes, values, attitude/behavior change and norms.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NR 530 Human Dimensions Application  Credit: 1 (1-0-0)
Course Description: Application of human dimensions information; incorporate information into decision-making process.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 531 Public Participation  Credit: 1 (1-0-0)
Course Description: Diagnostic tools for public involvement; appropriate methods for specific situations, issues, and stakeholders.
Prerequisite: None.
Registration Information: Required: B.S. degree; participant in Advancing Human Dimensions Expertise Among Fish and Wildlife Agencies training program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 535 Action for Sustainable Behavior  Credits: 3 (0-0-3)
Course Description: Review sustainability issues and develop solutions considering environments; economics; psychology; sociology; law and politics; and administration.
Prerequisite: None.
Registration Information: Graduate or senior standing; 1 course in human dimensions; 1 course in science. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540A Environmental Issues: Water Resources  Credits: 2 (1-2-0)
Course Description: 
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540B Environmental Issues: Biological Diversity  Credits: 2 (1-2-0)
Course Description: 
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540C Environmental Issues: Ecologic Reconciliation  Credits: 2 (1-2-0)
Course Description: 
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 540D Environmental Issues: Ecosystem Services  Credits: 2 (2-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership Program; must have concurrent registration in NR 540A-D.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 541 Conservation Policy, Finance, and Governance  Credits: 2 (2-0-0)
Course Description: Overview of conservation policy, finance and governance issues at the local, national, and international levels.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 542 Global Change and Conservation  Credits: 2 (2-0-0)
Course Description: Potential ecological, societal, and economic impacts of global change across scales in the context of conservation.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 543A Catalyzing Change: Conflict and Conservation  Credits: 2 (2-0-0)
Course Description: Communication, conflict management, group decision-making theories and tools to effectively create change in the field of conservation.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 543B Catalyzing Change: Collaborative Conservation  Credits: Var[2-3] (0-0-0)
Course Description: Collaborative communication theories, methods and tools to effectively create change in the field of conservation.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544A Conservation Methods: Watershed Sciences  Credit: 1 (1-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NR 544B Conservation Methods: Ecological Sciences Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544C Conservation Methods: Social Sciences Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544D Conservation Methods: Spatial Information Credit: 1 (1-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 544E Conservation Methods: Integrative Field Work Credits: Var[2-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 545A Multilevel Views: Society and Conservation- Mexico Credits: 2 (2-0-0)
Course Description: Myriad and often opposing views of societal and environmental problems across cultures and across scales.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 545B Multilevel Views: Society and Conservation- Global Credits: 3 (3-0-0)
Course Description: Myriad and often opposing views of societal and environmental problems across cultures and across scales.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 546A Socioecological Context: Mexico Credits: 2 (2-0-0)
Course Description: Background for field site-specific conservation: ecosystems, peoples, politics, and development.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 546B Socioecological Context: Global Credits: 3 (3-0-0)
Course Description: Background for field site-specific conservation: ecosystems, peoples, politics, and development.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 547 Poverty and Sustainable Development Credits: 2 (2-0-0)
Course Description: Theoretical and methodological tools to analyze the interactions between poverty and sustainable development in the field site country.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 548A Conservation Planning and Management: Mexico Credits: 2 (2-0-0)
Course Description: Fundamental theories and management practices of protected areas in a global context.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 548B Conservation Planning and Management: Global Credits: 3 (3-0-0)
Course Description: Fundamental theories and management practices of protected areas in a global context.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NR 549A Conservation and Systems Leadership Credits: Var[1-3] (0-0-0)
Course Description: Conservation leadership development by exposure to leadership models, theories, case studies, assessments and trainings.
Prerequisite: None.
Registration Information: Admission to the Conservation Leadership program.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NR 549B Conservation and Systems Leadership: Field Credits: Var[1-3] (0-0-0)  
Course Description: Effective environmental leadership across cultures through exposure to leadership models, theories, case studies, assessments and trainings.  
Prerequisite: None.  
Registration Information: Admission to the Conservation Leadership program.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 550 Sustainable Military Lands Management Credits: 3 (3-0-0)  
Course Description: Overview of military lands in the U.S.—historical, geographical, environmental—and evolution of military lands as part of the federal lands system.  
Prerequisite: None.  
Registration Information: Completed undergraduate degree. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 551 Cultural Resource Management on Military Lands Credits: 3 (3-0-0)  
Course Description: Intro to cultural resource laws and policies for broad range of heritage resources, prehistoric and historic, with emphasis on tools and techniques.  
Prerequisite: NR 550.  
Registration Information: Graduate standing. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 552 Ecology of Military Lands Credits: 3 (3-0-0)  
Course Description: Landscape ecology of military lands with emphasis on ecological processes and principles as related to militarily-induced disturbances.  
Prerequisite: NR 550.  
Registration Information: Graduate standing. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 553 DoD Sustainable Building and Infrastructure Credits: 3 (3-0-0)  
Course Description: Major components of sustainability and sustainable design on U.S. military installations.  
Prerequisite: NR 550.  
Restriction: Must be a: Graduate.  
Registration Information: Bachelor’s degree. Sections may be offered: Online.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 554 Ecological and Social Agent-based Modeling Credits: 3 (2-2-0)  
Also Offered As: ANTH 554.  
Course Description: Exploring the use and making of agent-based models featuring interacting individuals in ecological and social simulation, with examples and projects.  
Prerequisite: None.  
Restriction: Must not be a: Freshman, Freshman, Sophomore, Sophomore.  
Registration Information: Junior or senior standing. Credit not allowed for both NR 554 and ANTH 554.  
Term Offered: Spring (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 555 Preparation of Grant Proposals Credits: 2 (2-0-0)  
Course Description: Idea development, preparation, writing, and presentation of research proposals in natural resources.  
Prerequisite: (STAT 301) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

NR 556 Habitat Evaluation Procedures Credits: 2 (2-0-0)  
Course Description: Rationale, philosophy, and use of habitat as a mechanism for conducting environmental impact assessments.  
Prerequisite: None.  
Registration Information: General biological, natural resources, or planning course work.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

NR 557 Ecosystem Services in a Changing World Credits: 3 (3-0-0)  
Course Description: Understanding of ecosystem services and global change.  
Prerequisite: None.  
Registration Information: Admission to the Conservation Leadership program.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 558 Research Methods in Conservation Credits: 4 (4-0-0)  
Course Description: Reviews the contribution of fieldwork/research in addressing conservation issues, social and ecological data collection, and analysis methods.  
Prerequisite: None.  
Registration Information: Admission to the Conservation Leadership program. Sections may be offered: Online.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

NR 559 Systems Thinking and Biodiversity Credits: 3 (3-0-0)  
Course Description: Social-ecological systems and the implication of social-ecological systems thinking for biological diversity conservation efforts.  
Prerequisite: None.  
Registration Information: Admission to the Conservation Leadership master’s degree program.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.
NR 565 Principles of Natural Resources Ecology Credits: 3 (3-0-0)
Course Description: Overview of ecological fundamentals examined from the perspective of forest, rangeland, wildlife and fisheries science and management.
Prerequisite: None.
Registration Information: Written consent of instructor can substitute for degree program requirement. Admission to the Masters of Natural Resources Stewardship degree program. Offered as an online course only.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 566 Natural Resource Inventory and Data Analysis Credits: 3 (3-0-0)
Course Description: Sampling designs, implementation and analysis for inventory and monitoring of forests, rangelands, wetlands and streams.
Prerequisite: None.
Registration Information: Written consent of instructor can substitute for degree program requirement. Admission to the Masters of Natural Resources Stewardship degree program. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 567 Analysis of Environmental Impact Credits: 3 (3-0-0)
Course Description: Preparation and evaluation of environmental impact statements under NEPA.
Prerequisite: None.
Registration Information: Admission to the Masters of Natural Resources Stewardship degree program. Written consent of instructor can substitute for degree program requirement. Credit not allowed for both NR 567 and NR 622. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 568 Economics of Forests, Restoration and Fire Credits: 3 (3-0-0)
Course Description: Overview of basic microeconomics principles as applied to forestry, restoration, and wildland fire management.
Prerequisite: None.
Registration Information: Admission to the Masters of Natural Resources Stewardship degree program. Written consent of instructor can substitute for degree program requirement. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 577 Wetland Ecology and Restoration Credits: 3 (3-0-0)
Course Description: Wetland hydrology, ecology and soils; assessing conditions and identifying common disturbances; restoration techniques, planning and implementation.
Prerequisite: (NR 565 or NR 678 or RS 500) and (NR 567).
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 578 Ecology of Disturbed Lands Credits: 3 (3-0-0)
Course Description: Analysis of basic and applied ecological principles involved in the restoration of drastically disturbed lands.
Prerequisite: (LAND 220 or LIFE 220) and (SOCR 240).
Registration Information: Credit not allowed for both NR 578 and RS 578.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 592 Seminar in Natural Resources Credits: Var[1-18] (0-0-0)
Course Description: Public relations aspects of current natural resource management programs; case history approach.
Prerequisite: NR 400.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 600 Advanced Public Relations in Natural Resources Credits: 2 (1-0-1)
Course Description: Public relations relations aspects of current natural resource management programs; case history approach.
Prerequisite: NR 400.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 621 Design of Geographic Information Systems Credits: 3 (1-4-0)
Course Description: Algorithms, procedures, and applications of spatial data handling and spatial analysis.
Prerequisite: (LAND 520 or NR 322) and (CS 110).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NR 625 Community-Based Natural Resource Management Credits: 3 (0-0-3)
Course Description: History, theory, practice, and evaluation of community-based natural resource management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: One upper division course in natural resource ecology, management, or social science.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 676 Ecological Models Credits: 4 (3-2-0)
Course Description: Model development for ecosystems, subsystems; deterministic, stochastic models; validation, sensitivity analysis.
Prerequisite: NR 575.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NR 678 Advanced Ecological Restoration Credits: 4 (3-0-1)
Course Description: Analysis of environmental factors influencing restoration of disturbed lands and practices for successful restoration of disturbed ecosystems.
Prerequisite: (BZ 450 or F 311 or LAND 220 or LIFE 220) and (SOCR 240).
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Natural Resource Stewardship program can substitute for coursework. Credit not allowed for both NR 678 and RS 478. Sections may be offered: Online.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NR 687 Natural Resources Internship Credits: Var[1-8] (0-0-0)
Course Description: Field experience and exercises in international natural resources management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

NR 693 Natural Resources Stewardship Seminar Credits: Var[1-2] (0-0-0)
Course Description: Invited speakers will present different perspectives on natural resources.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Natural Resources Stewardship degree program. Written consent of instructor. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NR 793 Seminar on Remote Sensing and GIS Credit: 1 (0-0-1)
Course Description: Techniques, use of remote sensing, GIS technologies for forest, range, wildlife, water, geology, recreation, and other resource management applications.
Prerequisite: NR 322 or NR 323 or NR 503 or NR 505.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Natural Rsrce Rec + Trsm-NRRT (NRRT)

Courses

NRRT 100 Foundations of Recreation and Tourism Credits: 3 (3-0-0)
Course Description: Current concepts, terminology, suppliers, and the social, economic, and personal benefits from recreation, leisure, and tourism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 231 Principles-Parks/Protected Area Management Credits: 3 (3-0-0)
Course Description: Tools and strategies used by managers in parks and protected areas.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 262 Principles of Environmental Communication Credits: 3 (3-0-0)
Course Description: Principles of environmental communication, education, and interpretation for managing natural and cultural resources.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 270 Principles of Natural Resource Tourism Credits: 3 (3-0-0)
Course Description: Tourism and private commercial outdoor recreation industry in America.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 301 Conservation Leadership Credits: 3 (3-0-0)
Course Description: Approaches to conservation leadership.
Prerequisite: NRRT 262 and NRRT 231.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 320 International Issues-Recreation and Tourism Credits: 3 (3-0-0)
Course Description: History, development, and preservation of international parks, preserves, tourist and historical sites.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 321 Travel Abroad-Marine Ecotourism-Bahamas Credits: 3 (1-3-1)
Course Description: Environmental and socio-cultural aspects of marine ecotourism in the Bahamas.
Prerequisite: None.
Registration Information: Minimum GPA 2.500; 3 credits in natural sciences. Passport and ability to swim will be required.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 330 Social Aspects of Natural Resource Management Credits: 3 (3-0-0)
Course Description: Conceptual frameworks of human dimension research and its application to resource management decisions.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 331 Management of Parks and Protected Areas Credits: 3 (2-3-0)
Course Description: Comprehensive assessment of problems confronted by park professionals and the techniques and tools applied to their solution.
Prerequisite: NRRT 231 and NRRT 330.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 340 Principles in Conservation Planning and Mgmt Credits: 3 (3-0-0)
Course Description: Social, economic, legal, and ecological concepts that shape planning and management frameworks within conservation.
Prerequisite: NRRT 231.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 350 Wilderness Leadership Credits: 3 (2-2-0)
Course Description: Practical and philosophical aspects of wilderness usage including safety, group dynamics, and backcountry skills.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 351 Wilderness Instructors Credits: 3 (2-2-0)
Course Description: Preparation to safely lead and instruct groups in outdoor wilderness programs; further refine skills including judgement and leadership.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 360 Group Decision Making in Natural Resources Credits: 3 (3-0-0)
Course Description: Theoretical, critical, and practical approaches to group decision making, collaboration, and teamwork related to natural resource management.
Prerequisite: NRRT 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 361 Natural Resources and the Media Credits: 3 (3-0-0)
Course Description: Representations of the environment in the media and strategies for effective media relations about natural resource issues.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 362 Environmental Conflict Management Credits: 3 (3-0-0)
Course Description: Theoretical, critical and practical approaches to negotiation, mediation and conflict management strategies related to natural resources.
Prerequisite: NRRT 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 363 Outdoor Recreation Programming Credits: 3 (2-2-0)
Course Description: Develop administrative and program planning skills for private, public, and nonprofit recreation tourism organizations.
Prerequisite: NRRT 231 or NRRT 270.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 364 Management of Parks and Protected Areas Credits: 3 (2-3-0)
Course Description: Comprehensive assessment of problems confronted by park professionals and the techniques and tools applied to their solution.
Prerequisite: NRRT 231 and NRRT 330.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 365 Principles in Conservation Planning and Mgmt Credits: 3 (3-0-0)
Course Description: Social, economic, legal, and ecological concepts that shape planning and management frameworks within conservation.
Prerequisite: NRRT 231.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 366 Group Decision Making in Natural Resources Credits: 3 (3-0-0)
Course Description: Theoretical, critical, and practical approaches to group decision making, collaboration, and teamwork related to natural resource management.
Prerequisite: NRRT 262.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 367 Natural Resources and the Media Credits: 3 (3-0-0)
Course Description: Representations of the environment in the media and strategies for effective media relations about natural resource issues.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 384  Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 400  Environmental Governance  Credits: 3 (3-0-0)
Course Description: Theory and practice of prevalent environmental governance approaches in diverse social and environmental contexts.
Prerequisite: NRRT 231.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 401  Collaborative Conservation  Credits: 3 (3-0-0)
Course Description: Guiding principles and practices for effectively engaging stakeholders in conservation issues and natural resource management.
Prerequisite: NRRT 231 or NRRT 262.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 425  Communication for Tourism  Credits: 3 (3-0-0)
Course Description: Exploration and practical application of communication theories, concepts, and techniques for successful communication in the context of tourism industry practice.
Prerequisite: NRRT 372.
Registration Information: Junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 431  Protected Areas, Working Lands, Livelihoods  Credits: 3 (3-0-0)
Course Description: Management practices of protected areas and working lands that work at the interface of ecological, human, and economic dimensions.
Prerequisite: (NRRT 231) and (LAND 220 or LIFE 220).
Registration Information: Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

NRRT 432  Foundations of Forest Recreation  Credit: 1 (0-0-1)
Course Description: History, philosophy, role, and sources of information of the Forest Service and National Forest System.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 433  Meeting Needs of Recreation Users  Credits: 4 (0-0-4)
Course Description: Visitor behavior, communications and conflicts, working with volunteers, programs, partnerships, quality service, and role of interpretive services.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 434  Recreation Special Uses and Appeals  Credits: 3 (0-0-3)
Course Description: Special use benefits, authorities, planning, terms and conditions, administration and kinds, appeal review, discretionary review and decisions.
Prerequisite: None.
Registration Information: Written consent of instructor. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 435  Trails, Facility Design, Operation, Maintenance  Credits: 3 (0-0-3)
Course Description: Trail planning, development, maintenance; recreation site planning, design operation, maintenance; visitor and resource protection.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 436  Recreation, Visual, Cultural Resource Management  Credits: 2 (0-0-2)
Course Description: Economic analysis, recreation opportunity spectrum, visual and cultural resource management.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 437  Off-Road Vehicle, River, and Winter Recreation  Credits: 2 (0-0-2)
Course Description: History, authorities, planning, management, and coordination of off-road, river, and winter recreation.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 438 Management of Wilderness Credits: 2 (0-0-2)
Course Description: Forest Service role, management principles, legislative differences, components, public education, visitor management, and wilderness management skills.
Prerequisite: None.
Registration Information: Written consent of instructor required. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 439 Open Space and Natural Area Management Credits: 3 (3-0-0)
Course Description: Acquisition of, planning for, and management of local government and private open space and natural areas.
Prerequisite: NR 440 or NRRT 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 440 Applications in Environmental Communication Credits: 3 (3-0-0)
Course Description: Application of tools and techniques for communicating to audiences about issues related to conservation, environment and sustainability.
Prerequisite: NRRT 262.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 441 Spatial Analysis of Protected Areas Credits: 3 (2-2-0)
Course Description: Spatial analytical techniques used in planning and managing protected areas, including locating, managing, and assessing parks.
Prerequisite: NRRT 231.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 442 Tourism Planning Credits: 3 (3-0-0)
Course Description: Planning for regional tourism resources and programs.
Prerequisite: NRRT 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 457 Off-Highway Vehicle Recreation in America Credits: 3 (0-0-3)
Course Description: Overviews the supply and demand of off-highway vehicle recreation.
Prerequisite: None.
Registration Information: Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 458 Planning for Off-Highway Vehicle Recreation Credits: 3 (0-0-3)
Course Description: Develop working knowledge of the planning tools, concept, and process for off-highway vehicle recreation.
Prerequisite: NRRT 457.
Registration Information: Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 473  Ski Area Management  Credits: 3 (3-0-0)
Course Description: Ski area management; history and trends, ski area
operations, human resource management, environmental issues, liability,
resort planning and design.
Prerequisite: NRRT 270.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.

NRRT 483  Off-Campus Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

NRRT 487  Internship  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 485A  Independent Study: Administration  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 485B  Independent Study: Management  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 485C  Independent Study: Interpretation  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 496  Group Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 499  Senior Thesis  Credits: Var[1-18] (0-0-0)
Course Description: Independent research project culminating in thesis
presented to faculty mentor.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NRRT 504  Water-Based Recreation  Credits: 2 (2-0-0)
Course Description: Identify issues and management strategies for
recreation utilization of water resources.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 504  Water-Based Recreation  Credits: 2 (2-0-0)
Course Description: Identify issues and management strategies for
recreation utilization of water resources.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 505  Environmental Education History and Theory  Credits: 3 (3-0-0)
Course Description: History and theories, planning and instruction;
outcomes, historical events; ecological literacy; experiential learning
models.
Prerequisite: None.
Registration Information: Upper-division course in natural resources.
Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 506  Methods in Environmental Education Research  Credits: 3 (3-0-0)
Course Description: Research methods and designs; literature reviews,
needs assessments and program evaluation of environmental education
in informal settings.
Prerequisite: None.
Registration Information: Upper-division course in natural resources.
Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 507  Environmental Education Planning  Credits: 3 (3-0-0)
Course Description: Informal learning theory; evaluation models focused
on education in informal settings such as nature centers, zoos, etc.
Prerequisite: None.
Registration Information: One upper-division course in natural resources,
biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 508  Current Issues in Environmental Education  Credits: 3 (3-0-0)
Course Description: Impact of current events, legislation, demographic
changes, and other events on informal environmental education.
Prerequisite: None.
Registration Information: One upper-division course in natural resources,
biological sciences, or ecology. Offered as a correspondence course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 509  Science Education in Informal Settings  Credits: 3 (3-0-0)
Course Description: Theory, application of teaching environmental
science in informal settings–nature centers, zoos, etc. Inquiry, safety,
group management, experience.
Prerequisite: None.
Registration Information: Upper division course in natural resources or
related field. NOTE: This course does not count toward State teacher
licensure.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 520 Perspectives on Ski Area Management Credits: 2 (2-0-0)
Course Description: Introduction to the history of skiing, the ski industry, and ski area management around the world.
Prerequisite: None.
Registration Information: Bachelor's degree required. This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 521 Sustainable Ski Area Management Credits: 2 (2-0-0)
Course Description: Examines sustainability issues that relate specifically to ski resort development and management.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 522 Ski Area Operations and Human Resources Credits: 2 (2-0-0)
Course Description: Examines ski area operations and services.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 523 Strategic Ski Area Marketing and Management Credits: 2 (2-0-0)
Course Description: Examines strategic management and marketing concepts within a ski area context.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 524 Ski Area Finance and Investment Credits: 2 (2-0-0)
Course Description: Examines finance and investment considerations relevant to ski area operations and management.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 525 Ski Area Planning and Development Credits: 2 (2-0-0)
Course Description: Examines the various planning and design considerations for ski area development and expansion.
Prerequisite: NRRT 520.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 550 Ecotourism Credits: 3 (3-0-0)
Course Description: Concept of ecotourism, impacts associated with ecotourism, and role of education/interpretation in mitigating these impacts.
Prerequisite: NRRT 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 565 Research-Human Dimensions Natural Resources Credits: 3 (3-0-0)
Course Description: Theory, research, literature review, hypothesis development, scientific writing, proposal development.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 600 Tourism Industry Concepts and Practices Credits: 2 (0-0-2)
Course Description: Primary conceptual issues on contemporary tourism important to comprehend the practice of tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial-semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 601 Tourism Quantitative Analysis I Credits: 2 (0-0-2)
Course Description: Statistical techniques used by researchers to inform and support tourism decision-making.
Prerequisite: STAT 312.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 602 Tourism Quantitative Analysis II Credits: 2 (0-0-2)
Course Description: Explores the domestic and international sources of data and their applications for decision-making in tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 605 Human Dimensions of Natural Resources Theory Credits: 3 (3-0-0)
Course Description: Application of theories and conceptual approaches from social sciences to study of recreation behavior and natural resource issues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 610  Natural Resource Management and Tourism  Credits: 2 (0-0-2)
Course Description: Connection between the management of tourism resources and the changing conditions of the natural world.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 615  Sustainable Tourism Development Foundation  Credits: 2 (0-0-2)
Course Description: Theory, practice, history, terminology, and issues surrounding sustainable tourism development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 620  Organizational Management in Tourism  Credits: 2 (0-0-2)
Course Description: Concepts of organizational management in the context of tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 625  Communication/Conflict Management in Tourism  Credits: 2 (0-0-2)
Course Description: Negotiation tools for effective organizational communication/conflict management in tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 650  Financial Management in Tourism  Credits: 2 (0-0-2)
Course Description: Concepts in financial management applied to travel and tourism organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 655  Tourism Marketing Concepts and Applications  Credits: 2 (0-0-2)
Course Description: Marketing processes as they apply to travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 565. NRRT 565 and STAT 301.

NRRT 660  Law and Legal Liability in Tourism  Credits: 2 (0-0-2)
Course Description: Concepts in legal liability and business law in the context of travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 662  Global Tourism Policy  Credits: 2 (0-0-2)
Course Description: Major global policies, trends, and challenges facing the travel and tourism industry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 665  Survey Research and Analysis  Credits: 3 (2-2-0)
Course Description: Survey research, design, and analysis in human dimensions of natural resources.
Prerequisite: NRRT 565 and STAT 301.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 666  Qualitative Research in NRRT  Credits: 3 (3-0-0)
Course Description: Qualitative approaches to tourism research and techniques from a range of disciplinary backgrounds; methodological aspects.
Prerequisite: NRRT 565.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 671  Strategic Management for Travel and Tourism  Credits: 2 (0-0-2)
Course Description: Factors, tools, and techniques for strategic management of a travel and tourism business or organization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Offered as an online course only. This is a partial semester course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NRRT 679A  Current Topics in Nature Based Tourism  Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 679B  Current Topics in Nature Based Tourism  Credit: 1 (0-0-1)
Course Description: Current topics in nature-based travel and tourism.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing. Students will enroll for this course during both the Fall and Spring semesters.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 695A  Independent Study: Administration Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695B  Independent Study: Management Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695C  Independent Study: Interpretation Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 695D  Independent Study: Landscape Planning Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 698  Research Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 699  Thesis Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 765  Applied Multivariate Analysis Credits: 3 (2-2-0)
Course Description: Application and interpretation of multivariate statistics to human dimensions in natural resources, recreation, and tourism.
Prerequisite: NRRT 665.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NRRT 784  Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 798  Research Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NRRT 799  Dissertation Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Natural Sciences-NSCI (NSCI)

Courses

NSCI 192  Introductory Seminar Credits: 2 (0-0-2)
Course Description: Introduction to the culture and values of science and the College of Natural Sciences.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NSCI 295  Independent Study-Natural Sciences Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 296  Group Study-Natural Sciences  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 298  Undergraduate Research-Natural Sciences  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 299  Group Study-Natural Sciences  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 384  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Supervised experience in a computer lab.
Prerequisite: None.
Registration Information: Written consent of instructor required. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
NSCI 487  Internship-Natural Sciences  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 495  Independent Study-Natural Sciences  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 496  Group Study-Natural Sciences  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 498  Undergraduate Research-Natural Sciences  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of Natural Sciences Dean's Office required.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
NSCI 579  Animal Behavior in Captive Populations  Credits: 3 (3-0-0)
Also Offered As: VS 579.
Course Description: How animals learn, perceive their work, and behave, and how all of those intersect to alter behavior in captive settings.
Prerequisite: BZ 300.
Registration Information: Enrollment in the M.P.N.S., Zoo, Aquarium, and Shelter Management specialization can be used in place of BZ 300. Credit not allowed for both NSCI 579 and VS 579.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
NSCI 590A  Workshop in Instruction: Science Instruction in Rural Colorado  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
NSCI 590B  Workshop in Instruction: Mathematics Instruction in Rural Colorado  Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
NSCI 590C  Workshop in Instruction: Small Scale Science-Teachers as Researchers  Credits: 4 (2-4-0)
Course Description: 
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
NSCI 590D  Workshop in Instruction: Colorado Science Teacher Enhancement Project  Credits: 7 (0-0-7)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
NSCI 590E  Workshop in Instruction: Summer Mathematics  Credits: 3 (0-0-3)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
NSCI 590F  Workshop in Instruction, Small Scale Chemistry  Credits: 2 (1-2-0)
Course Description: 
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Terms Offered</th>
<th>Prerequisite</th>
<th>Registration Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSCI 596</td>
<td>Small Scale Science Group Study</td>
<td>Var[1-3]</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Credit not allowed for both NSCI 601 and PHIL 601. This is a partial-semester course.</td>
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<td>NSCI 601</td>
<td>Master of Profess. Natural Sciences Ethics</td>
<td>1</td>
<td>Fall</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
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<tr>
<td>NSCI 610</td>
<td>Team Research in Quantitative Ecology</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
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<tr>
<td>NSCI 619</td>
<td>Physics for Science Educators</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
</tr>
<tr>
<td>NSCI 620</td>
<td>Chemistry for Science Educators</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
</tr>
<tr>
<td>NSCI 640</td>
<td>Energetics for Science Educators</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
</tr>
<tr>
<td>NSCI 650</td>
<td>Pollution and Environmental Biology for Educators</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
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<tr>
<td>NSCI 660</td>
<td>Evolutionary Biology for Educators</td>
<td>3</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
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<tr>
<td>NSCI 670</td>
<td>MPNS Internship: Preparation</td>
<td>Var[1-4]</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
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<tr>
<td>NSCI 677</td>
<td>MPNS Internship: Project</td>
<td>Var[1-8]</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
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<tr>
<td>NSCI 693</td>
<td>Seminar--MPNS</td>
<td>1</td>
<td>Fall, Spring, Summer</td>
<td>None</td>
<td>Enrollment in the Master of Professional Natural Sciences program. Sections may be offered: Online.</td>
</tr>
</tbody>
</table>
NCSI 695 Independent Study for the MNSE Credits: 3 (0-0-3)
Course Description: Independent study based on review of the primary scientific literature in biology, chemistry, or physics.
Prerequisite: NCSI 698.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NCSI 696 Group StudyCredits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree required. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

NCSI 698 Research Experience in Natural Sciences Credits: 6 (0-0-6)
Course Description: Research experience in biology, chemistry, or physics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Nine credits MNSE program coursework.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

Neurobiology-NB (NB)

Courses

NB 192 Introductory Neuroscience Seminar Credit: 1 (0-0-1)
Course Description: Introduction to neuroscience; discussion of concentrations, career paths and research opportunities. Group activities and strategies for success.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 292 Research Topics in Neuroscience Credit: 1 (0-0-1)
Course Description: A discussion of current research interests of neuroscience faculty.
Prerequisite: None.
Registration Information: Neuroscience majors only. May only be taken once for credit.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 399 Thesis Preparation Credit: 1 (0-0-1)
Course Description: Preparation for senior thesis in Neuroscience.
Prerequisite: (CO 300 or CO 301B) and (BMS 300).
Registration Information: Junior standing in Neuroscience major.
Term Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 475 Mentored Research in Neuroscience Credits: 3 (0-0-1)
Course Description: Mentored research with final written report required.
Prerequisite: CHEM 344, may be taken concurrently and LIFE 212.
Registration Information: May be taken twice for a maximum of 6 credits. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

NB 487 Internship in Neuroscience Credits: Var[1-12] (0-0-0)
Course Description: Work experience with an approved preceptor outside of CSU.
Prerequisite: CHEM 344 and LIFE 212.
Registration Information: Approval by undergraduate program director of preceptor and project. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 493 Senior Seminar Credit: 1 (0-0-1)
Course Description: Topics of current interest in neuroscience.
Prerequisite: None.
Registration Information: Senior standing.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 495 Independent Study Credits: Var[1-4] (0-0-0)
Course Description: Instructor mentored projects performed independently.
Prerequisite: None.
Registration Information: Written consent of Neuroscience undergraduate program director. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 496 Group Study in Neuroscience Credits: Var[1-4] (0-0-0)
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Registration Information: Written consent of Neuroscience undergraduate program director. Maximum of 12 credits toward degree for any combination of NB 475, NB 487, NB 495, NB 496.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

NB 499 Senior Thesis Credits: 3 (0-0-3)
Course Description: Interpreting research results (experiential or from the literature) and writing a thesis; oral presentation required; supervised by a faculty mentor.
Prerequisite: NB 399.
Registration Information: Senior standing in the Neuroscience major.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
NB 500 Readings in Cellular Neurobiology Credit: 1 (0-0-1)
Course Description: Membrane properties of nerve and muscle; molecular mechanisms of synaptic function; neuro-muscular units.
Prerequisite: (BZ 100 to 481 - at least 1 course or BIO 100 to 481 - at least 1 course or LIF 100 to 481 - at least 1 course) and (BC 100 to 481 - at least 1 course and PH 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160 to 161 - at least 1 course or MATH 255 or MATH 261) and (NB 501, may be taken concurrently or BMS 500, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 501 Cellular and Molecular Neurophysiology Credits: 2 (2-0-0)
Course Description: Membrane properties of nerve and muscle; molecular mechanisms of synaptic function; neuromuscular units.
Prerequisite: (BZ 100 to 481 - at least 1 course or BIO 100 to 481 - at least 1 course or LIF 100 to 481 - at least 1 course) and (BC 100 to 481 - at least 1 course and PH 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160 to 161 - at least 1 course or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both NB 501 and BMS 500.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 502 Techniques in Molecular & Cellular Biology Credits: 2 (1-3-0)
Also Offered As: CM 502.
Course Description: Current methods in molecular and cellular neurobiology.
Prerequisite: None.
Registration Information: Written consent of instructor required. Must register for lecture and laboratory. Credit not allowed for both NB 502 and CM 502.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 503 Developmental Neurobiology Credits: 3 (3-0-0)
Also Offered As: BMS 503.
Course Description: Molecular mechanisms involved in development of nervous system including differentiation, growth, pathfinding, and synaptogenesis.
Prerequisite: (BIO 100 to 481 - at least 1 course or BZ 100 to 481 - at least 1 course or LIF 100 to 481 - at least 1 course) and (BC 100 to 481 - at least 1 course and PH 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160 to 161 - at least 1 course or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both NB 503 and BMS 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 505 Neuronal Circuits, Systems and Behavior Credits: 3 (3-0-0)
Also Offered As: BMS 505.
Course Description: Anatomical and physiological organization of the nervous system.
Prerequisite: BMS 325 or BMS 500 or NB 501.
Registration Information: Credit not allowed for both NB 505 and BMS 505.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 556 Practicum-Techniques in Neuroscience II Credit: 1 (0-2-0)
Course Description: Current research projects in the laboratories of neuroscience faculty.
Prerequisite: NB 501 and NB 502.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 600 Advanced Psychology-Sensation and Perception Credits: 3 (3-0-0)
Also Offered As: PSY 600D.
Course Description: Neural mechanisms of human perception; color and depth perception, pitch, loudness, and the effects of aging.
Prerequisite: PSY 456 and PSY 100 to 799 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both NB 600 and PSY 600D.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

NB 650 Computer Analysis of Neuronal Proteins Credit: 1 (1-0-0)
Course Description: Theory and practice of using computers to study proteins.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

NB 750 Physiology of Ion Channels Credits: 2 (2-0-0)
Course Description: Physiological and structural analysis of membrane ion channels.
Prerequisite: BMS 500.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor required.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

NB 771 Writing, Submitting, and Reviewing Grants Credit: 1 (1-0-0)
Course Description: Preparation of NRSA fellowship proposals; proposal review; possible submission to NIH for funding.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

NB 793 Neuroscience Seminar Credit: 1 (0-0-1)
Course Description: Review; possible submission to NIH for funding.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
NB 796A  Group Study: Ion Channels  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796B  Group Study: Neuronal Growth and Regeneration  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796C  Group Study: Topics in Neuroscience  Credits: Var[1-4] (0-0-0)
Also Offered As: BMS 796A.
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. May not be taken concurrently with BMS 796A.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796D  Group Study: Seizures and Epilepsy  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

NB 796E  Group Study: Neuroendocrine Mechanisms  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 355  The Disability Experience in Society  Credits: 2 (1-0-1)
Course Description: Description and exploration of disabling conditions; review of support systems including legal and financial implications.
Prerequisite: PSY 100 or SOC 100.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 450  Biomechanics of Human Occupation  Credits: 3 (0-2-2)
Course Description: Exploration of performance of the activities of daily living in context as impacted by function/dysfunction of the human musculoskeletal system.
Prerequisite: None.
Registration Information: Minimum of 4 credits of either combined anatomy and physiology or human anatomy at the 200-level or higher. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 590  Workshop  Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 597  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 601  Occupation and Rehabilitation Science I  Credits: 3 (1-0-2)
Course Description: Multidisciplinary perspectives on human performance and participation in everyday occupations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 610  Professional Decision Making  Credits: 3 (0-2-2)
Course Description: Exploration of the thought processes occupational therapists use when determining how best to address clients' needs.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master's degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
OT 611 Reflective and Evidence-Based Practice Credits: 3 (0-0-3)
Course Description: Development of reflective and evidence-based practice skills through integrating and synthesizing fieldwork experiences in OT practice.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 620 Research to Practice I Credits: 3 (3-0-0)
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to individuals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to master’s degree program in occupational therapy.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 621 Occupational Performance: Infancy-Childhood Credits: 4 (2-2-1)
Course Description: Optimizing occupational performance and participation for infants and children within a contextual framework.
Prerequisite: OT 687A to 687Z.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of the Occupation Therapy Department can be substituted for OT 687.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 630 Occupational Performance: Adult to Old Age I Rec Credits: 3 (0-0-3)
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence and activities.
Prerequisite: OT 610 and OT 620 and OT 601.
Restriction: Must be a: Graduate.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 660; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 636 Occupational Performance: Adult/Old Age I Lab Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to roles, satisfaction, competence, and activities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate.
Registration Information: Must have concurrent registration in OT 630; Must have concurrent registration in OT 660; Must have concurrent registration in OT 665; Must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 640 Research to Practice II Credits: 3 (3-0-0)
Course Description: Critically evaluate qualitative and quantitative research processes pertaining to groups and systems.
Prerequisite: OT 620.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 641 Occupation and Rehabilitation Science II Credits: 3 (1-0-2)
Course Description: Explore historical evolution of topics and the link to future implications for and growth of occupation and rehabilitation science.
Prerequisite: OT 601 and OT 611 and OT 631 and OT 687 to 687*.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 656 Topics on Brain Plasticity and Performance Credits: 3 (2-0-1)
Course Description: Multidisciplinary viewpoints on brain plasticity and its relationship to performance across the lifespan.
Prerequisite: None.
Registration Information: Occupational Therapy graduate student or written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 660 Occupational Performance: Adult/Old Age II Rec Credits: 3 (0-0-3)
Course Description: Foundations of occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 610 and OT 620 and OT 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 665; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
OT 661 Occupational Performance: Adolescent-Young Adult Credits: 3 (1-2-1)
Course Description: Optimizing occupational performance and participation for youth and young adults within a contextual framework.
Prerequisite: OT 621.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 665 Adult to Old Age II Lab Credits: 2 (0-4-0)
Course Description: Optimizing occupational performance for adults and older adults with attention to abilities, skills, and developed capacities.
Prerequisite: OT 601 and OT 610 and OT 620.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in OT 630; must have concurrent registration in OT 636; must have concurrent registration in OT 660; must have concurrent registration in OT 686C.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 666 Optimizing Occupation through Technology Credits: 3 (0-0-3)
Course Description: Use of technology-based resources and/or strategies (current and emerging) to meet client needs in their everyday occupations and contexts.
Prerequisite: None.
Registration Information: Admission to Occupational Therapy M.O.T., M.S., or Ph.D. program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 676 Pathokinesiological Conditions and Assessment Credits: 3 (3-0-0)
Course Description: Various musculoskeletal imbalances and injuries that present as difficulties in function and participation in everyday activity.
Prerequisite: OT 450.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

OT 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Option.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686A Fieldwork I: OT Process Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to occupational therapy master’s degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

OT 686B Fieldwork I: Seminar Credits: 3 (0-2-2)
Course Description: Level I fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of all first year OT courses; admission to occupational therapy master’s degree program; evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

OT 686C Fieldwork I: Adult to Old Age Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A and OT 610.
Restriction: Must be a: Graduate, Professional.
Registration Information: Concurrent registration in OT 630 and OT 660; evidence of professional liability insurance required.
Terms Offered: Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 686D Fieldwork I: Infancy to Young Adult Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A to 687Z and (OT 621, may be taken concurrently or OT 661, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

OT 686E Fieldwork I: Special Interest Credits: Var[1-4] (0-0-0)
Course Description: Level I fieldwork in various settings.
Prerequisite: OT 686A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Evidence of professional liability insurance required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 687A Fieldwork IIA: Acute In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687B Fieldwork IIA: Rehab In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
OT 687C Fieldwork IIA: SNF/Acute LTC Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687D Fieldwork IIA: General Rehab Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687E Fieldwork IIA: Hand Therapy Hospital Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687F Fieldwork IIA: Hand Therapy Private Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687G Fieldwork IIA: Psych In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687H Fieldwork IIA: Combined Practice Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687M Fieldwork II: Behavioral Health Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687N Fieldwork II: Older Adult Community Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687O Fieldwork II: Older Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687P Fieldwork II: Adult Day Program Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Successful completion of first year of OT
Master’s Program courses; evidence of professional liability insurance
and approval of department chair required.
Term Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
OT 687Q Fieldwork II: Home Health Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688E Fieldwork IIB: Hand Therapy Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 687T Fieldwork II: Other Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; evidence of professional liability insurance and approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688F Fieldwork IIB: Hand Therapy Private Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688A Fieldwork IIB: Acute In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688G Fieldwork IIB: Psych In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688B Fieldwork IIB: Rehab In-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688H Fieldwork IIB: Combined Practice Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688C Fieldwork IIB: SNF/Acute LTC Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688I Fieldwork IIB: Pediatric Hospital/Unit Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688J Fieldwork IIB: Pediatric Hospital/Out-Patient Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
OT 688K  Fieldwork IIB: Pediatric Community  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688L  Fieldwork IIB: Pediatric Out-Patient Clinic  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688M  Fieldwork IIB: Behavioral Health Community  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688N  Fieldwork IIB: Older Adult Community  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688O  Fieldwork IIB: Older Adult Day Program  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688P  Fieldwork IIB: Adult Day Program  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688Q  Fieldwork IIB: Home Health  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688R  Fieldwork IIB: School Early Intervention  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688S  Fieldwork IIB: School (PK-12)  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 688T  Fieldwork IIB: Other  Credits: Var[1-12] (0-0-0)
Course Description: Level II fieldwork in various settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Successful completion of first year of OT Master’s Program courses; approval of department chair required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

OT 690  Workshop  Credits: Var[1-9] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 692  Seminar  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 694  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
OT 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 701 Occupation and Rehabilitation Science III Credits: 3 (0-0-3)
Course Description: Investigation of the intersection of occupational science and rehabilitation science research situated in various paradigms.
Prerequisite: OT 640 and OT 641.
Registration Information: Three credits of research must be in quantitative research and three credits must be in qualitative research.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

OT 710 Teaching Occupation and Rehab Science Credits: 3 (0-0-3)
Course Description: Design and implementation of teaching and learning philosophies and approaches in occupation and rehabilitation science contexts.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

OT 784 Supervised College Teaching Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 786 Practicum Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: OT 620, may be taken concurrently.
Registration Information: Concurrent enrollment in OT 620 or 3 credits of qualitative research.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 792 Seminar Credits: 3 (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 794 Independent Study Credits: 6 (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Admission into a PhD program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 796 Group Study Credits: 6 (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

OT 799 Dissertation Credits: Var[1-15] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Philosophy-PHIL (PHIL)
Courses
PHIL 100 Appreciation of Philosophy (GT-AH3) Credits: 3 (3-0-0)
Course Description: Basic issues in philosophy including theories of knowledge, metaphysics, ethics, and aesthetics.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 103 Moral and Social Problems (GT-AH3) Credits: 3 (3-0-0)
Course Description: Contemporary ethical issues in the United States, such as abortion, euthanasia, and genetic engineering.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).
PHIL 104 Values, Culture, and Food Animal Agriculture Credits: 3 (3-0-0)
Also Offered As: ANEQ 104.
Course Description: Evolution of the social values and cultural understandings shaping modern animal agriculture; current problems in animal agriculture.
Prerequisite: None.
Registration Information: Non-Animal Science majors with freshman or sophomore standing. Credit not allowed for both PHIL 104 and ANEQ 104.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 110 Logic and Critical Thinking (GT-AH3) Credits: 3 (3-0-0)
Course Description: Identify, analyze, and evaluate real arguments in everyday life, politics, the sciences, and the professions.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 112 Reasoning and Problem Solving Credits: 3 (3-0-0)
Course Description: Creative and critical techniques in problem solving and decision making.
Prerequisite: None.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 120 History and Philosophy of Scientific Thought (GT-AH3) Credits: 3 (3-0-0)
Course Description: Historical development of western, scientific world view from ancient times to the 20th century.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Arts & Humanities 3B, Ways of Thinking (GT-AH3).

PHIL 130 Bioethics and Society Credits: 2 (2-0-0)
Course Description: Major issues in bioethics.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 170 World Philosophies (GT-AH3) Credits: 3 (3-0-0)
Course Description: Philosophies of North America, Mesoamerica, West Africa, South Asia, and East Asia.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Ways of Thinking (GT-AH3).

PHIL 171 Religions of the West Credits: 3 (3-0-0)
Course Description: Major religions of the Near East and West emphasizing their classical development; Judaism, Zoroastrianism, Christianity, Islam.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 172 Religions of the East Credits: 3 (3-0-0)
Course Description: Major religions of India and the Far East emphasizing their classical development; Hinduism, Buddhism, Confucianism, Taoism.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 173 Philosophy of Traditional Judaism Credits: 3 (3-0-0)
Course Description: Concepts and essentials of Jewish philosophy and Judaism, including overview of Jewish lifecycle, history, law, literature, ethics, and mysticism.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 205 Introduction to Ethics Credits: 3 (3-0-0)
Course Description: Problems and theories concerning values and standards, right action, and the good life.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 206 Knowledge and Existence-An Introduction Credits: 3 (3-0-0)
Course Description: Problems and theories concerning knowledge, being, nature of the world.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 210 Introduction to Formal Logic Credits: 3 (3-0-0)
Course Description: Elementary principles, techniques in propositional and predicate logic.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 240 Philosophies of Peace and Nonviolence Credits: 3 (3-0-0)
Course Description: Classic and contemporary religious and philosophical work on peace and nonviolence.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Term Offered</th>
<th>Grade Mode</th>
<th>Special Course Fee</th>
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<tr>
<td>PHIL 270</td>
<td>Issues in the Study of Religion</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
<td>Traditional</td>
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<tr>
<td>PHIL 295</td>
<td>Independent Study</td>
<td>Var[1-3] (0-0-0)</td>
<td>Fall, Spring</td>
<td>Instructor Option</td>
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<td>PHIL 297</td>
<td>Group Study</td>
<td>Var[1-3] (0-0-0)</td>
<td>Fall, Spring</td>
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<td>PHIL 300</td>
<td>Ancient Greek Philosophy</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
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<td>No.</td>
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<tr>
<td>PHIL 301</td>
<td>17th and 18th Century European Philosophy</td>
<td>3 (3-0-0)</td>
<td>Spring (even years)</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>PHIL 302</td>
<td>19th Century Philosophy</td>
<td>3 (3-0-0)</td>
<td>Fall (odd years)</td>
<td>Traditional</td>
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<tr>
<td>PHIL 305A</td>
<td>Philosophical Issues in the Professions: Business Ethics</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
<td>Traditional</td>
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<tr>
<td>PHIL 305B</td>
<td>Philosophical Issues in the Professions: Medical Life Science</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
<td>Traditional</td>
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<tr>
<td>PHIL 305C</td>
<td>Philosophical Issues in the Professions: Caring Professions</td>
<td>3 (3-0-0)</td>
<td>Spring (even years)</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>PHIL 305D</td>
<td>Philosophical Issues in the Professions: Engineering</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>PHIL 305E</td>
<td>Philosophical Issues in the Professions: Animal Science</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>PHIL 305F</td>
<td>Philosophical Issues in the Professions: Information Science</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
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<tr>
<td>PHIL 305G</td>
<td>Philosophical Issues in the Professions: Research Ethics</td>
<td>3 (3-0-0)</td>
<td>Fall, Spring</td>
<td>Traditional</td>
<td>No.</td>
</tr>
</tbody>
</table>

**Course Description:**

Contemporary religion, its nature, types, forms of expression.

Prerequisite: None.

Restriction: Must not be a: Freshman.

Registration Information: Sophomore standing or higher.

Terms Offered: Fall, Spring.

Grade Modes: S/U within Student Option, Trad within Student Option.

Special Course Fee: No.

**Course Description:**

Philosophy from the scientific revolution through Kant.

Prerequisite: PHIL 206 or PHIL 300.

Term Offered: Spring.

Grade Mode: Traditional.

Special Course Fee: No.

**Course Description:**

Philosophy of ancient Greece emphasizing Plato and Aristotle.

Prerequisite: PHIL 205 or PHIL 206 or PHIL 210.

Terms Offered: Fall, Spring, Summer.

Grade Modes: S/U within Student Option, Trad within Student Option.

Special Course Fee: No.

**Course Description:**

Philosophical problems, theories relevant to business.

Prerequisite: None.

Registration Information: May be repeated for credit with consent of department chair.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.
PHIL 310 Writing and Reasoning  Credits: 3 (3-0-0)  
Course Description: Logic-based, analytic and critical writing and reading of complex argument and explanation types.  
Prerequisite: (CO 150) and (PHIL 110 or PHIL 210).  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PHIL 312 Philosophy of Law  Credits: 3 (3-0-0)  
Course Description: Philosophical concepts, theories, and problems concerning the law.  
Prerequisite: None.  
Registration Information: Sophomore standing.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PHIL 315 Philosophy of Language  Credits: 3 (3-0-0)  
Course Description: Basic concepts and principles in the theory of language.  
Prerequisite: PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.  
Term Offered: Spring (odd years).  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

PHIL 318 Aesthetics-Visual Arts  Credits: 3 (3-0-0)  
Course Description: Central, traditional, and contemporary theories of the nature of visual arts.  
Prerequisite: None.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PHIL 320 Ethics of Sustainability  Credits: 3 (3-0-0)  
Course Description: Ethical and conceptual issues surrounding creation of sustainable societies and lifestyles.  
Prerequisite: None.  
Registration Information: Required field trips.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PHIL 325 Philosophy of Natural Science  Credits: 3 (3-0-0)  
Course Description: Structure of theories; basic concepts and assumptions; methods of explanation and confirmation; emphasis varies between physical and life sciences.  
Prerequisite: PHIL 210.  
Registration Information: PHIL 210; one course in natural sciences. May be repeated for credit with consent of department chair.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

PHIL 327 Philosophy of Behavioral Sciences  Credits: 3 (3-0-0)  
Course Description: Structure of theories; basic concepts; explanation and confirmation; reductionism and values; emphasis varies between psychology and social sciences.  
Prerequisite: PHIL 120 or PHIL 205 or PHIL 206 or PHIL 210 or PHIL 300 to 481 - at least 1 course.  
Registration Information: May be repeated for credit with consent of department chair.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PHIL 330 Agricultural and Food System Ethics  Credits: 3 (3-0-0)  
Also Offered As: AGRI 330.  
Course Description: Basic concepts in ethics and their application to agriculture and the food system.  
Prerequisite: CO 150.  
Registration Information: Credit not allowed for both PHIL 330 and AGRI 330.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PHIL 335 Islam: Cosmology and Practice  Credits: 3 (3-0-0)  
Course Description: Cosmological, spiritual, ritual, and practical aspects of Islam.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

PHIL 345 Environmental Ethics  Credits: 3 (3-0-0)  
Course Description: Scientific, philosophical, and religious concepts of nature as they bear on human conduct; an ecological perspective.  
Prerequisite: None.  
Restriction: Must not be a: Freshman.  
Registration Information: Sophomore standing or higher.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

PHIL 348 Philosophy of Literature and the Arts  Credits: 3 (3-0-0)  
Course Description: Aesthetic and philosophical issues in literature and the arts.  
Prerequisite: None.  
Term Offered: Spring (odd years).  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

PHIL 349 Philosophies of East Asia  Credits: 3 (3-0-0)  
Course Description: Philosophical traditions of East Asia, including Confucianism, Daoism, and Zen Buddhism.  
Prerequisite: None.  
Restriction: Must not be a: Freshman.  
Registration Information: Sophomore standing or higher.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

PHIL 350 Social and Political Philosophy  Credits: 3 (3-0-0)  
Course Description: Moral relationships between persons and institutions.  
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 to 499 - at least 1 course.  
Terms Offered: Fall, Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.  

PHIL 351 Interpreting the New Testament  Credits: 3 (3-0-0)  
Course Description: Contemporary methods of New Testament interpretation.  
Prerequisite: None.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
PHIL 353  Feminist Philosophies Credits: 3 (3-0-0)
Course Description: Conceptual, moral, and social analysis of women's issues from a variety of philosophical feminist perspectives.
Prerequisite: None.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 355  Philosophy of Religion Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature of religion and structure of meaning in religious discourse.
Prerequisite: PHIL 000 to 99999 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 359  Philosophy of Human Nature Credits: 3 (3-0-0)
Course Description: Philosophical study of theories of human nature.
Prerequisite: PHIL 105 or PHIL 205 or PHIL 206 or PHIL 300 to 481 - at least 1 course.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 360  Topics in Asian Philosophy Credits: 3 (3-0-0)
Course Description: Examination of major philosophical topics from ethics, sociopolitical philosophy, metaphysics, aesthetics.
Prerequisite: None.
Restriction: Must not be a: Freshman.
Registration Information: Sophomore standing or higher.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 366  Philosophy of Aging Credits: 3 (3-0-0)
Course Description: Philosophical problems related to experience of growing old.
Prerequisite: None.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 370  Contemporary Western Religious Thought Credits: 3 (3-0-0)
Course Description: Contemporary interpretations of significant Western religious traditions.
Prerequisite: PHIL 106 or PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 371  Contemporary Eastern Religious Thought Credits: 3 (3-0-0)
Course Description: Transformation of Indian and Chinese religious thought in the modern period.
Prerequisite: None.
Term Offered: Spring (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 372  Meaning and Truth in Religion Credits: 3 (3-0-0)
Course Description: Nature, variety, functions, interpretation, evaluation of religious language.
Prerequisite: PHIL 106 or PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 375  Science and Religion Credits: 3 (3-0-0)
Course Description: Encounter of religious belief with Western science, influences on each other, present relations.
Prerequisite: PHIL 106 or PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Spring.
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 379  Mysticism East and West Credits: 3 (3-0-0)
Course Description: Varieties of mystical experience in selected Eastern and Western representatives.
Prerequisite: PHIL 106 or PHIL 171 or PHIL 172 or PHIL 270.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 384  Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Teaching basic philosophy courses.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 407  Phenomenology and Existentialism Credits: 3 (3-0-0)
Course Description: Methods, epistemology, metaphysics, axiology, ethics of 20th-century phenomenologists and existentialists.
Prerequisite: PHIL 205 or PHIL 206 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 409  20th Century Philosophy Credits: 3 (3-0-0)
Course Description: Major figures, trends, and concepts in 20th-century philosophy.
Prerequisite: PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 410  Formal Logic Credits: 3 (3-0-0)
Course Description: Quantification theory; axiomatic systems; rigorous axiomatization of some logical or mathematical theory.
Prerequisite: PHIL 210 or CS 270.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 411  Formal Tools in Philosophy Credits: 3 (3-0-0)
Course Description: Formal methodological tools used in contemporary philosophy. Topics may include modal logic, formal semantics, and decision theory.
Prerequisite: PHIL 210.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 415  Logic and Scientific Method Credits: 3 (3-0-0)
Course Description: Approaches to analysis, assessment of scientific inference, problems of induction; applications to natural, behavioral, social sciences.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PHIL 425 Epistemology Credits: 3 (3-0-0)
Course Description: Concepts, problems, and theories of knowledge.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 435 Metaphysics Credits: 3 (3-0-0)
Course Description: Philosophical problems concerning nature, structure, and basic constituents of reality.
Prerequisite: PHIL 210 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 438 Philosophy of Mind Credits: 3 (3-0-0)
Course Description: Nature and status of mind, mental states, mental activity; the mind-body problem, mind and human sciences, mind and self, nature of human action.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302 or PHIL 325 or PHIL 327 or PHIL 359.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 447 Ethical Theory Credits: 3 (3-0-0)
Course Description: Fundamental problems and options in ethical theory.
Prerequisite: PHIL 205 or PHIL 300 or PHIL 301.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 455 Islamic Philosophy Credits: 3 (3-0-0)
Course Description: Development of philosophical thought in early, middle, and late Muslim civilization.
Prerequisite: PHIL 206 and PHIL 210.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 460 Seminar in Great Philosophers Credits: 3 (3-0-0)
Course Description: Works of one major figure in the history of philosophy.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Registration Information: Maximum of 9 credits allowed in course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 461 Seminar in Philosophical Issues and Problems Credits: 3 (3-0-0)
Course Description: Thorough examination of a major philosophical problem or issue.
Prerequisite: PHIL 300 or PHIL 301 or PHIL 302.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 462 Capstone Seminar Credits: 3 (1-0-2)
Course Description: In-depth, integrative study of major topics, texts, and problems in both philosophy and religion.
Prerequisite: PHIL 300 and PHIL 301 or PHIL 300 and PHIL 302 or PHIL 300 and PHIL 409 or PHIL 301 and PHIL 302 or PHIL 301 and PHIL 409 or PHIL 302 and PHIL 409.
Restriction: Must be a: Senior, Senior - 5yr Bachelor, Senior - Post Bachelor, Senior - Second Bachelor.
Registration Information: Senior standing. Two of the following courses are required: PHIL 300, PHIL 301, PHIL 302, PHIL 409. Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 463 Seminar in Religious Studies Credits: 3 (0-0-3)
Course Description: Comparative study of topics in world religions and philosophy or religion.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 479 Topics in Comparative Religions Credits: 3 (3-0-0)
Course Description: Comparative study of topics in world religions and philosophy or religion.
Prerequisite: PHIL 171 or PHIL 172 or PHIL 270.
Registration Information: PHIL 171 or PHIL 172 or PHIL 270; 300-level religious studies course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 495 Independent Study Credits: Var[1-9] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 497 Group Study Credits: Var[1-9] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 499 Thesis Credits: 3 (0-0-3)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of department chair.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 500 Seminar in Major Philosophical Texts Credits: 3 (0-0-3)
Course Description: Intensive study of one or two major works in the history of philosophy.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
PHIL 501 Seminar: Topics in History of Philosophy Credits: 3 (0-0-3)
Course Description: Selected figures and periods from the history of western philosophy, from ancient to modern. Topics change from semester to semester.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 525 Seminar in Epistemology Credits: 3 (0-0-3)
Course Description: Analysis of contemporary theories of knowledge.
Prerequisite: PHIL 425.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 527 Seminar in Philosophy of Science Credits: 3 (0-0-3)
Course Description: Systematic survey of major 20th-century philosophies of science.
Prerequisite: PHIL 325 or PHIL 327 or PHIL 415.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 535 Seminar in Metaphysics Credits: 3 (0-0-3)
Course Description: Contemporary topics in philosophical metaphysics.
Prerequisite: PHIL 500.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 545 Concept of Natural Value Credits: 3 (3-0-0)
Course Description: Philosophical analysis of nature as a value carrier. Types of value associated with nature, their interrelations.
Prerequisite: PHIL 345.
Term Offered: Spring (odd years).
Grade Mode: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 547 Seminar in Meta-Ethics Credits: 3 (0-0-3)
Course Description: Systematic and historical overview of contemporary theories of meta-ethics.
Prerequisite: PHIL 447.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 548 Seminar in Normative Ethical Theory Credits: 3 (0-0-3)
Course Description: Major topics in contemporary theories of normative ethics.
Prerequisite: None.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 550 Ethics and International Development Credits: 3 (3-0-0)
Also Offered As: IE 550.
Course Description: Ethical reflection applied to development goals, strategies of Third World countries; relations between developed and developing countries.
Prerequisite: None.
Registration Information: Written consent of instructor.
Credit not allowed for both PHIL 550 and IE 550.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 555 Seminar in Philosophical Models of Nature Credits: 3 (0-0-3)
Course Description: Comparative inquiry into the "nature" of nature as viewed by philosophers of the past and present.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 564 Seminar in Animal Rights Credits: 3 (0-0-3)
Course Description: Contemporary issues concerning nature and moral status of nonhuman animals.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 565 Seminar in Environmental Philosophy Credits: 3 (0-0-3)
Course Description: Aesthetic appreciation of nature, duties concerning fauna, flora, endangered species, ecosystem.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 566 Seminar in Applied Philosophy Credits: 3 (0-0-3)
Course Description: Application of philosophical ideas and methods to analyze practical problems such as distributive justice, abortion, human rights conflicts.
Prerequisite: None.
Registration Information: Written consent of instructor.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 570 Seminar in Contemporary Philosophical Theory Credits: 3 (0-0-3)
Course Description: Major concepts and problems in current philosophical theory.
Prerequisite: PHIL 500.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 593 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
PHIL 601 Master of Profess. Natural Sciences Ethics Credit: 1 (0-0-1)
Also Offered As: NSCI 601.
Course Description: Ethical issues involving the care and treatment of animals in captive environments. Lectures, case studies, discussions, and student presentations.
Prerequisite: None.
Registration Information: Enrollment in the Master of Professional Natural Sciences program required. Credit not allowed for both PHIL 601 and NSCI 601. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 662 Seminar Credits: 3 (0-0-3)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PHIL 666 Science and Ethics Credits: 3 (3-0-0)
Also Offered As: CM 666.
Course Description: Ethical issues of research on humans and animals; biosafety; fraud and deception in science; genetic engineering.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PHIL 666 and CM 666.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PHIL 684 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 695 Independent Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 697 Group Study Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 698 Research Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PHIL 699 Thesis Credits: Var[1-9] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

Physics-PH (PH)

Courses

PH 110 Descriptive Physics (GT-SC2) Credits: 3 (3-0-0)
Course Description: Conceptual aspects of physics applied to phenomena in everyday life and to problems in other fields of science.
Prerequisite: None.
Registration Information: Credit not allowed for both PH 110 and PH 121.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

PH 111 Descriptive Physics Laboratory (GT-SC1) Credit: 1 (0-2-0)
Course Description: Experiments dealing with basic physics concepts including explorations of everyday phenomena.
Prerequisite: PH 110, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 121 General Physics I (GT-SC1) Credits: 5 (3-2-1)
Course Description: Concepts of force, torque, energy, momentum, work used to cover fluids, waves, sound, temperature, heat; biological, physical examples (noncalculus).
Prerequisite: MATH 125, may be taken concurrently or MATH 155, may be taken concurrently or MATH 157, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, laboratory and recitation. Credit not allowed for both PH 121 and PH 110; or for both PH 121 and PH 141.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 122 General Physics II (GT-SC1) Credits: 5 (3-2-1)
Course Description: Electricity including electrostatics and simple circuits; magnetism; optics; nuclear physics, radiation; biological, physical examples (noncalculus).
Prerequisite: PH 121 or PH 141.
Registration Information: Must register for lecture, laboratory, and recitation. Credit not allowed for both PH 122 and PH 142.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).
PH 141  Physics for Scientists and Engineers I (GT-SC1)  Credits: 5 (3-2-1)
Course Description: Forces, energy, momentum, angular momentum, oscillations, waves, heat, thermodynamics (calculus based).
Prerequisite: MATH 126, may be taken concurrently and MATH 155, may be taken concurrently or MATH 159, may be taken concurrently or MATH 160, may be taken concurrently.
Registration Information: Must register for lecture, laboratory and recitation. Credit not allowed for both PH 141 and PH 121.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Physical Sciences w/ lab (GT-SC1).

PH 142  Physics for Scientists and Engineers II (GT-SC1)  Credits: 5 (3-2-1)
Course Description: Electricity and magnetism, circuits, light, optics (calculus based).
Prerequisite: (PH 141) and (MATH 161, may be taken concurrently or MATH 255, may be taken concurrently or MATH 271, may be taken concurrently).
Registration Information: Must register for lecture, laboratory and recitation. Credit not allowed for both PH 142 and PH 122.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/ lab (GT-SC1).

PH 192  The Flying Circus of Physics  Credits: 2 (0-0-2)
Course Description: Richness and variety of physical phenomena; physical world view including appreciation for the academic community.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 245  Introduction to Electronics  Credits: 3 (2-3-0)
Course Description: AC circuits, physical bases and applications of electronic devices.
Prerequisite: MATH 161 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 293  Selected Topics in Physics  Credit: 1 (1-0-0)
Course Description: Selected topics in physics with emphasis on depth of understanding.
Prerequisite: PH 142.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PH 298  Introductory Research  Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 314  Introduction to Modern Physics  Credits: 4 (4-0-0)
Course Description: Relativity; quantum mechanics; atomic structure; applications to solid-state, nuclear, and elementary particle physics.
Prerequisite: (MATH 261, may be taken concurrently) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 315  Modern Physics Laboratory  Credits: 2 (0-4-0)
Course Description: Experiments in modern physics.
Prerequisite: PH 314, may be taken concurrently.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 327  Analytical Techniques for Physics  Credits: 3 (3-0-0)
Course Description: Applications to physics of curvilinear coordinate systems, line/surface integrals, linear algebra, ordinary/partial differential eqs., probability.
Prerequisite: (MATH 261) and (MATH 340 or MATH 345) and (PH 142 and PH 314).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PH 341  Mechanics  Credits: 4 (4-0-0)
Course Description: Particle dynamics, translation and rotation of rigid bodies, moving coordinate systems, Lagrangian mechanics, matrix and tensor methods.
Prerequisite: (MATH 340 or MATH 345) and (PH 141).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 351  Electricity and Magnetism  Credits: 4 (4-0-0)
Course Description: Electrostatics, magnetostatics, currents, time-dependent electric and magnetic fields, radiation.
Prerequisite: (MATH 340 or MATH 345) and (PH 142).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 353  Optics and Waves  Credits: 4 (3-3-0)
Course Description: Geometrical optics; wave optics; interference, diffraction, and polarization; quantum optics.
Prerequisite: MATH 261 and PH 142.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 361  Physical Thermodynamics  Credits: 3 (3-0-0)
Course Description: Laws of thermodynamics; thermodynamic potentials; applications such as fluids, phase transitions, electrical and magnetic systems, binary mixtures.
Prerequisite: MATH 261 and PH 142.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 384  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Participation as a physics tutor.
Prerequisite: PH 121 or PH 141.
Registration Information: Written consent of department chair required. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 425  Advanced Physics Laboratory  Credits: 2 (0-4-0)
Course Description: Advanced experiments in electricity and magnetism, statistical physics and quantum mechanics.
Prerequisite: PH 315 and PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 451  Introductory Quantum Mechanics I  Credits: 3 (3-0-0)
Course Description: Schrodinger's theory of wave mechanics, potential wells, harmonic oscillators, wave packets, operators, angular momentum.
Prerequisite: (MATH 340 or MATH 345) and (PH 314).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 452  Introductory Quantum Mechanics II  Credits: 3 (3-0-0)
Course Description: Approximation techniques, perturbation theory, identical particles and spin, structure and spectra of atoms and molecules, hydrogen atom.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 462  Statistical Physics  Credits: 3 (3-0-0)
Course Description: Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein distribution functions; kinetic theory; applications to solids, metals, semiconductors, and gases.
Prerequisite: MATH 340 and PH 314 and PH 361.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 492  Seminar  Credit: 1 (0-0-1)
Course Description: Preparation and presentation of seminars on selected modern topics.
Prerequisite: None.
Registration Information: Written consent of instructor required.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 495  Independent Study  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 498  Research  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 517  Chaos, Fractals, and Nonlinear Dynamics  Credits: 3 (3-0-0)
Course Description: Strange attractors, fractal dimensions, Lyapunov exponents, multifractal spectrum, period doubling, universality, intermittency, time-delay embedding.
Prerequisite: (MATH 261 and PH 341) and (MATH 340 or MATH 345).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 521  Introduction to Lasers  Credits: 3 (3-0-0)
Course Description: Stimulated emission; laser resonators; theory of laser oscillation; specific laser systems; applications.
Prerequisite: (MATH 340 and PH 353) and (CHEM 476 or PH 451).
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 522  Introductory Laser Laboratory  Credit: 1 (0-2-0)
Course Description: Experiments providing hands-on experiences with lasers.
Prerequisite: PH 521, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 531  Introductory Solid State Physics  Credits: 3 (3-0-0)
Course Description: Crystal structures and bonding, electronic levels and vibrations, dielectric, optical and magnetic properties, quasiparticles, superconductivity.
Prerequisite: PH 451 and PH 361.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 561  Elementary Particle Physics  Credits: 3 (3-0-0)
Course Description: Quark model, scattering models and standard model of electroweak interactions, physics of colliders.
Prerequisite: PH 451.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 571  Mathematical Methods for Physics I  Credits: 3 (3-0-0)
Course Description: Vector analysis, eigenvalues and eigenvectors, infinite series, method of Frobenius, complex variables, contour integration.
Prerequisite: MATH 340.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
PH 572 Mathematical Methods for Physics II Credits: 3 (3-0-0)
Course Description: Partial differential equations, Sturm-Liouville theory, special functions, Green's functions, Fourier series, Fourier and Laplace transforms.
Prerequisite: PH 571.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 621 Classical Mechanics Credits: 3 (3-0-0)
Course Description: Central forces, scattering, noninertial reference frames, Coriolis force, Lagrange's and Hamilton's equations, small oscillations, continuum mechanics.
Prerequisite: (PH 341) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 631 Solid State Physics Credits: 3 (3-0-0)
Course Description: Electronic band structure and conduction phenomena; cohesive energy; lattice dynamics and thermal properties; metals; insulators; semiconductors.
Prerequisite: PH 531.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 641 Electromagnetism I Credits: 3 (3-0-0)
Course Description: Electrostatics in a vacuum and a medium, general solution of Laplace's equation, Green's functions, magnetostatics in a vacuum and a medium.
Prerequisite: (PH 351) and (PH 572).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 642 Electromagnetism II Credits: 3 (3-0-0)
Course Description: Maxwell's equations, electromagnetic waves, radiation by accelerated charges, special relativity, Lagrangian formulation of electromagnetism.
Prerequisite: PH 641.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 651 Quantum Mechanics I Credits: 3 (3-0-0)
Course Description: WKB theory, Heisenberg picture, 3D wells, hydrogen atom, time-independent perturbation theory, angular momentum and spin, Clebsch-Gordan coefficients.
Prerequisite: (PH 452) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 652 Quantum Mechanics II Credits: 3 (3-0-0)
Course Description: Wigner-Eckhart theorem, symmetries, density matrix, identical particles, interaction picture, time-dependent perturbation theory, scattering.
Prerequisite: PH 651.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 661 Statistical Mechanics Credits: 3 (3-0-0)
Course Description: Canonical and grand-canonical ensembles; Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; density operator; Bose-Einstein condensation.
Prerequisite: (PH 452 and PH 462) and (PH 571, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 751 Current Topics in Physics Research Credits: 3 (0-0-3)
Course Description: Written consent of instructor.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 752 Research Credits: Var[1-18] (0-0-0)
Course Description: Written consent of instructor.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PH 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 722 Quantum Electronics Credits: 3 (3-0-0)
Course Description: One- and two-photon spectroscopy; broadening mechanisms; nonlinear optics; coherent phenomena; experimental methods.
Prerequisite: PH 521.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PH 731 Condensed Matter Theory Credits: 3 (3-0-0)
Course Description: Second quantization; electrons; phonons; electron-phonon interaction; superconductivity; magnetism; spin waves; density-functional methods; symmetry.
Prerequisite: (PH 462) and (PH 531) and (PH 652).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 762 Elementary Particle Theory Credits: 3 (3-0-0)
Course Description: Symmetries, electrodynamics, renormalization, and the running coupling constant. Hadron structure, QCD, gauge symmetry and electroweak interaction.
Prerequisite: PH 561 and PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PH 770 Quantum Theory Credits: 3 (3-0-0)
Course Description: Formal scattering theory; relativistic quantum mechanics, quantum theory of radiation, symmetries and statistics, many-body theory.
Prerequisite: PH 652.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

PH 784 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Supervised teaching of general physics laboratory and recitation sections.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793A Seminar: Condensed Matter Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793B Seminar: Laser Spectroscopy/Quantum Electronics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793C Seminar: Statistical Mechanics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793D Seminar: Mathematical Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 793E Seminar: High Energy Physics Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 795 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PH 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Political Science-POLS (POLS)

Courses

POLS 101 American Government and Politics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Principles, structures, and processes of American national government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).
POLS 103  State and Local Government and Politics (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Principles, organization, and operation of American state and local government.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

POLS 131  Current World Problems (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Background and nature of international political events.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 232  International Relations (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Basic concepts and approaches to international relations.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 241  Comparative Government and Politics (GT-SS1)  Credits: 3 (3-0-0)
Course Description: Major foreign political systems stressing cross-national comparision of political forces, parties, ideologies, and institutions.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Economic or Political Systems (GT-SS1).

POLS 302  U.S. Political Parties and Elections  Credits: 3 (3-0-0)
Course Description: Foundational, institutional, and behavioral features of American political parties and elections.
Prerequisite: POLS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
POLS 303  Politics of Organized Interests  Credits: 3 (3-0-0)
Course Description: Role of interests in varied forms: social movements, institutions, associations, and membership groups in American politics.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 304  Legislative Politics  Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. legislatures.
Prerequisite: POLS 101.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 305  Judicial Politics  Credits: 3 (3-0-0)
Course Description: Allocation of powers among judicial structures in American federal system.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 306  Executive Politics  Credits: 3 (3-0-0)
Course Description: Structure, organization, behavior, processes, and policy implications of U.S. executive leadership.
Prerequisite: POLS 101.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 309  Urban Politics  Credits: 3 (3-0-0)
Course Description: Governmental structures and political processes in urban government.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 320  Empirical Political Analysis  Credits: 3 (3-0-0)
Course Description: Methods of empirical political inquiry.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 321  Empirical Political Analysis Laboratory  Credit: 1 (0-2-0)
Course Description: Laboratory applications of empirical research methods.
Prerequisite: None.
Registration Information: Must have concurrent registration in POLS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
POLS 331  Politics and Society Along Mexican Border  Credits: 3 (3-0-0)
Course Description: Analysis of U.S.-Mexican relations and domestic politics as these affect regional characteristics and development of U.S.-Mexican border region.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 332  International Political Economy  Credits: 3 (3-0-0)
Also Offered As:  ECON 332.
Course Description:  Theories on relations between international politics and economics. Policy implications of different theories and case studies.
Prerequisite:  (ECON 202 or AREC 202) and (POLS 232).
Registration Information:  Credit not allowed for both POLS 332 and ECON 332.
Terms Offered:  Fall, Spring.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

POLS 341  Western European Government and Politics  Credits: 3 (3-0-0)
Course Description:  Politics in Western European countries such as Britain, France, and Germany, and countries influenced by European traditions.
Prerequisite:  POLS 241.
Term Offered:  Fall.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

POLS 345  Russian, Central, and East European Politics  Credits: 3 (3-0-0)
Course Description:  Political structures and processes in Russia, Central and East Europe, and selected post-Communist countries.
Prerequisite:  POLS 241.
Registration Information:  Must register for lecture and recitation. Freshman not allowed.
Terms Offered:  Fall, Spring, Summer.
Grade Mode:  Traditional.
Special Course Fee:  No.

POLS 351  Public Administration  Credits: 3 (3-0-0)
Course Description:  Government organization and management; decision processes; political and intergovernmental relations in administration.
Prerequisite:  POLS 101.
Terms Offered:  Fall, Spring, Summer.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

POLS 361  U.S. Environmental Politics and Policy  Credits: 3 (3-0-0)
Course Description:  Public and contemporary issues relating to U.S. environmental policy.
Prerequisite:  POLS 101.
Registration Information:  Sections may be offered: Online.
Terms Offered:  Fall, Spring, Summer.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

POLS 362  Global Environmental Politics  Credits: 3 (3-0-0)
Course Description:  Cross-national and international contexts of environmental politics and policy.
Prerequisite:  POLS 232.
Terms Offered:  Fall, Spring, Summer.
Grade Mode:  Traditional.
Special Course Fee:  No.

POLS 364  U.S. Energy Policy Analysis  Credits: 3 (3-0-0)
Course Description:  Discussion and analysis of energy use and its impact on the economy and environment with an emphasis on future policy.
Prerequisite:  POLS 101.
Registration Information:  Sections may be offered: Online.
Terms Offered:  Fall, Spring, Summer.
Grade Mode:  Traditional.
Special Course Fee:  No.

POLS 371  U.S. Space Policy  Credits: 3 (3-0-0)
Course Description:  Analysis of U.S. space politics, space law, and space policy making.
Prerequisite:  None.
Registration Information:  Sections may be offered: Online.
Term Offered:  Fall.
Grade Mode:  Traditional.
Special Course Fee:  No.

POLS 405  Race and Ethnicity in U.S. Politics  Credits: 3 (3-0-0)
Course Description:  Relationships among American racial/ethnic groups, political attitudes, behavior, race and ethnicity roles in elections; implications for public policy.
Prerequisite:  POLS 101.
Term Offered:  Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

POLS 409  Urban and Regional Politics  Credits: 3 (3-0-0)
Course Description:  Governance processes and public policies in metropolitan regions.
Prerequisite:  POLS 101 or POLS 103.
Terms Offered:  Fall, Spring.
Grade Mode:  Traditional.
Special Course Fee:  No.

POLS 410  American Constitutional Law  Credits: 3 (3-0-0)
Course Description:  Allocation of powers among structures in American federal system.
Prerequisite:  POLS 101.
Term Offered:  Fall.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

POLS 413  U.S. Civil Rights and Liberties  Credits: 3 (3-0-0)
Course Description:  U.S. Constitutional provisions and cases pertaining to the rights and liberties of individuals.
Prerequisite:  POLS 101.
Term Offered:  Spring, Summer.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

POLS 420  History of Political Thought  Credits: 3 (3-0-0)
Course Description:  Issues and texts related to tradition of political thought from the ancient through the modern period.
Prerequisite:  None.
Registration Information:  Sections may be offered: Online.
Terms Offered:  Fall, Spring.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.

POLS 421  Contemporary Political Theories  Credits: 3 (3-0-0)
Course Description:  Major political theories and ideologies of contemporary times.
Prerequisite:  None.
Term Offered:  Fall.
Grade Modes:  S/U within Student Option, Trad within Student Option.
Special Course Fee:  No.
POLS 442 Democratic Theory Credits: 3 (3-0-0)
Course Description: Competing approaches to the theory and practice of
democracy, both locally and globally.
Prerequisite: POLS 101.
Registration Information: POLS 101; completion of AUCC category 2.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 422 American Political Theories Credits: 3 (3-0-0)
Course Description: Major American theories and ideologies: their
development and present uses.
Prerequisite: POLS 232.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 445 Comparative Asian Politics Credits: 3 (3-0-0)
Course Description: East and South Asian political systems emphasizing
issues of development, political culture, and institutional change.
Prerequisite: POLS 241.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 446 Politics of South America Credits: 3 (3-0-0)
Course Description: South American political actors and institutions with emphasis on themes of development, democracy, revolution, and international affairs.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 447 Politics in Mexico, Central America, Caribbean Credits: 3 (3-0-0)
Course Description: Mexican politics with comparison to one or more Central American and Caribbean countries.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 448 Comparative Racial/Ethnic Politics Credits: 3 (3-0-0)
Course Description: Comparative examination of politics of race and ethnicity and role it plays in formation of nation-states.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
POLS 449 Middle East Politics Credits: 3 (3-0-0)
Course Description: Political issues of the Middle East, including the Palestinian-Israeli conflict, Islamism, and democratization.
Prerequisite: POLS 241.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 451 Public Policy Design and Governance Credits: 3 (3-0-0)
Course Description: Examination of governance institutions outside the scope of traditional bureaucratic organizations and accountability.
Prerequisite: POLS 101 or POLS 103.
Registration Information: Junior standing.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 459 Program Evaluation for Public Administrators Credits: 3 (3-0-0)
Course Description: An overview of research methods and statistical methods for public administrators.
Prerequisite: POLS 101.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 460 Public Policy Process Credits: 3 (3-0-0)
Course Description: Explanations of U.S. policy formation, implementation, and impact.
Prerequisite: POLS 101.
Registration Information: Junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 462 Globalization, Sustainability, and Justice Credits: 3 (3-0-0)
Course Description: Public and private policies to promote sustainability and social justice in a globalizing world.
Prerequisite: POLS 232 or POLS 241.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 463 Urban Policy and Management Credits: 3 (3-0-0)
Course Description: Policy choices and management issues associated with urban government.
Prerequisite: POLS 101 or POLS 103.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 465 Public Policy Analysis Credits: 3 (3-0-0)
Course Description: Methods and tools used in the practice of policy analysis and evaluation of current public policy; emphasis on applied analysis.
Prerequisite: POLS 101.
Registration Information: POLS 101; completion of AUCC category 2; junior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 466A Practicum: Legislative Politics Credits: 6 (0-8-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for laboratory and recitation.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

POLS 482A Study Abroad: Politics and Culture in Turkey Credits: 3 (0-0-3)
Course Description: Politics, history and material culture of Turkey. A study abroad experience.
Prerequisite: POLS 241.
Registration Information: Written consent of instructor. Freshman not allowed.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 486A Practicum: Legislative Politics Credits: 6 (0-8-2)
Course Description:
Prerequisite: None.
Registration Information: Must register for laboratory and recitation.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.
POLS 509  Gender and the Law  Credits: 3 (3-0-0)
Course Description: Relationship between gender and the law and the changing nature of that relationship over time.
Prerequisite: POLS 410 or POLS 413.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 520  Theories of Political Action  Credits: 3 (3-0-0)
Course Description: Intensive review of primary material on Western political thought.
Prerequisite: POLS 420 or POLS 421.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 530  International Relations  Credits: 3 (3-0-0)
Course Description: Theory and methodology utilized in different approaches to international relations.
Prerequisite: None.
Registration Information: Nine credits in international relations or related studies.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 531  International Security Studies  Credits: 3 (3-0-0)
Course Description: Theories of international security as applied to different issue areas, both traditional and non-traditional.
Prerequisite: None.
Registration Information: Graduate standing. Three upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 532  Governance of the World Political Economy  Credits: 3 (3-0-0)
Course Description: Theoretical and practical debates on the organization and governance of the world political economy.
Prerequisite: None.
Registration Information: Nine upper-division credits in international relations with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 540  Comparative Politics  Credits: 3 (3-0-0)
Course Description: Theories, methods, and approaches to study of comparative politics.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 541  Political Economy of Change and Development  Credits: 3 (3-0-0)
Course Description: Responses of the state and its institutions to political, economic, and social change.
Prerequisite: None.
Registration Information: Three upper-division credits in comparative politics with a grade of B or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 542  Democracy and Democratization  Credits: 3 (3-0-0)
Course Description: Theoretical foundations of democracy and democratization across world regions.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 544  National Identities and Nation Building  Credits: 3 (3-0-0)
Also Offered As: ETST 544.
Course Description: How statist conceptions of race and ethnicity have been mobilized in nation-building projects.
Prerequisite: None.
Registration Information: Credit not allowed for both POLS 544 and ETST 544.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 550  Advanced Public Administration  Credits: 3 (3-0-0)
Course Description: Overview of study of public administration; recent developments in theory and practice.
Prerequisite: POLS 351.
Registration Information: Written consent of instructor required.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

POLS 552A  Topics in Public Administration, Personnel  Credits: 3 (3-0-0)
Course Description: Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552B  Topics in Public Administration, Budgeting and Finance  Credits: 3 (3-0-0)
Course Description: Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 552C  Topics in Public Administration, Regulation  Credits: 3 (3-0-0)
Course Description: Prerequisite: POLS 351.
Registration Information: GPA of 3.00 or better.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
POLS 587  Internship  Credits: Var[1-6] (0-0-0)
Course Description: Supervised work experience in a professional setting related to political science.
Prerequisite: POLS 500 to 99999 - at least 18 credits.
Registration Information: Graduate standing in Political Science.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
POLS 620  Approaches to the Study of Politics  Credits: 3 (3-0-0)
Course Description:
Prerequisite: POLS 100 to 481 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 621  Qualitative Methods in Political Science  Credits: 3 (3-0-0)
Course Description: Research design, data gathering and organization, ethical issues, and computer applications in qualitative political research.
Prerequisite: SOC 311 or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both POLS 621 and SOC 610.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
POLS 624  Scope and Methods of Political Science  Credits: 3 (3-0-0)
Course Description: Graduate survey of the scope of the Political Science discipline and the range of research designs and methods used in the discipline.
Prerequisite: POLS 300 to 9999 - at least 15 credits.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
POLS 625  Quantitative Methods of Political Research  Credits: 3 (3-0-0)
Course Description: Quantitative approaches and methods for study of political life.
Prerequisite: POLS 320.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 626  Political Research Laboratory  Credit: 1 (0-2-0)
Course Description:
Prerequisite: POLS 321.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in POLS 625.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 652  Public Organization Theory  Credits: 3 (0-0-3)
Course Description: Theories of behavior of individuals and organizations in government bureaucracies.
Prerequisite: POLS 351.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 660  Theories of the Policy Process  Credits: 3 (3-0-0)
Course Description: Recent developments in policy analysis.
Prerequisite: POLS 351 or POLS 460.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 665  Public Policy Analysis  Credits: 3 (0-0-3)
Course Description: The practice of policy analysis and the tools used to conduct an analysis including: forecasting, CBA, CEA, and policy design.
Prerequisite: POLS 625.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
POLS 670  Politics of Environment and Sustainability  Credits: 3 (3-0-0)
Course Description: Domestic, international, and comparative dimensions of environment and natural resources and policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
POLS 684  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
POLS 692  Seminar in Environmental Policy  Credits: 3 (0-0-3)
Course Description: Topics in domestic and/or global environmental policy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
POLS 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
POLS 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Psychology-PSY (PSY)

POLS 709 Environmental Politics in the U.S. Credits: 3 (3-0-0)
Course Description: Selected primary materials on governmental performance, groups, and mass public in American environmental politics.
Prerequisite: (POLS 500 or POLS 501) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 729 Political Theory and the Environment Credits: 3 (3-0-0)
Course Description: Political thought applied to questions of the environment.
Prerequisite: POLS 520 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 739 International Environmental Politics Credits: 3 (3-0-0)
Course Description: Theories and methodologies used in analyzing international environmental politics and policy.
Prerequisite: POLS 530 and POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 749 Comparative Environmental Politics Credits: 3 (3-0-0)
Course Description: Application of comparative political theory to analysis of environmental politics.
Prerequisite: (POLS 540 or POLS 541) and (POLS 670).
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 759 Environmental Policy and Administration Credits: 3 (3-0-0)
Course Description: Effects of regulation, intergovernmental relations, and resource availability on federal environmental programs in U.S.
Prerequisite: POLS 670.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

POLS 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

POLS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Courses

PSY 100 General Psychology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Principles of psychology emphasizing empirical approaches; theories and research on learning, individual differences, perception, social behavior.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 152 Science of Learning Credits: 3 (3-0-0)
Course Description: The science of learning and remembering with an emphasis on strategies and methods that students can use to enhance their learning and studying.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 175 Developmental Psychology Across the Life Span Credits: 3 (0-0-3)
Also Offered As: HDFS 175.
Course Description: Theory and research on physical, cognitive, and psychosocial human development across the life span.
Prerequisite: None.
Registration Information: Offered as a telecourse only. Credit not allowed for both PSY 175 and HDFS 175.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 192 Psychology First-Year Seminar Credit: 1 (0-0-1)
Course Description: Special topics in psychology.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 210 Psychology of the Individual in Context Credits: 3 (3-0-0)
Course Description: Psychological explanations of cultural, social, and individual differences in behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 228 Psychology of Human Sexuality Credits: 3 (3-0-0)
Course Description: Physiology, psychology of human sexuality; cross-cultural issues, development, social perspectives, values, sexual dysfunction.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 250 Research Methods in Psychology Credits: 4 (4-0-0)
Course Description: Design, analysis, and reporting of psychological research.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 252 Mind, Brain, and Behavior Credits: 3 (3-0-0)
Course Description: Psychological, physiological, and evolutionary explanations of perception, cognition, and behavior.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 260 Child Psychology Credits: 3 (3-0-0)
Course Description: Description and explanation of development of human behavior emphasizing theory and research concerned with infant and child.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 292A Seminar: Industrial/Organizational Credit: 1 (0-0-1)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292B Seminar: Mind, Brain & Behavior Credit: 1 (0-0-1)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292C Seminar: Controversial Issues in Psychology Credit: 1 (0-0-1)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 292D Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 295 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 296 Group Study Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 300 Positive Psychology Credits: 3 (3-0-0)
Course Description: Survey of research on religion from a psychological perspective.
Prerequisite: PSY 100.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 305 Psychology of Religion Credits: 3 (3-0-0)
Course Description: Survey of research on religion from a psychological perspective.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 310 Basic Counseling Skills Credits: 3 (3-0-0)
Course Description: Psychologically-based interpersonal communication skills; rapport thinking, gathering information and bringing about change in others.
Prerequisite: PSY 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 311A Basic Counseling Skills Laboratory: CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills in drug addiction treatment, for students seeking CACI certification.
Prerequisite: PSY 100 and PSY 310, may be taken concurrently.
Registration Information: Credit not allowed for both PSY 311A and PSY 311B.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 311B Basic Counseling Skills Laboratory: Non-CACI Credits: 2 (0-4-0)
Course Description: Application of psychologically-based interpersonal communication skills, for students who are not seeking CACI certification.
Prerequisite: (PSY 100) and (PSY 310, may be taken concurrently).
Registration Information: Credit not allowed for both PSY 311B and PSY 311A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 315 Social Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research findings emphasizing research methodology; applications to contemporary social problems.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 316 Environmental Psychology Credits: 3 (3-0-0)
Course Description: Social psychological theory and research on effects of behavior on the environment; environmental influences on behavior.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 317 Social Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Review of research techniques in social psychology. Computer simulations with applications to contemporary social problems.
Prerequisite: PSY 250 and PSY 315, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 320 Abnormal Psychology Credits: 3 (3-0-0)
Course Description: Definition and description of behavior pathology; theory and research on factors in etiology and treatment of behavior disorders.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 325 Psychology of Personality Credits: 3 (3-0-0)
Course Description: Theory and research related to personality as a psychological concept; analytic, phenomenological, and behavioristic views.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 327 Psychology of Women Credits: 3 (2-0-1)
Course Description: Contemporary theory and research focusing on emotional, cognitive, biosocial, and interpersonal contributions to female identity and sex role.
Prerequisite: PSY 100.
Registration Information: Must register for lecture and recitation.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 330 Clinical and Counseling Psychology Credits: 3 (3-0-0)
Course Description: Conceptualization of clients, assessment, intervention techniques for behavior change, research methods, ethical issues.
Prerequisite: PSY 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 335 Forensic Psychology Credits: 3 (3-0-0)
Course Description: The psychology of crime and criminal behavior, including theory on deviance, the criminal mind, and the root causes of violence in society.
Prerequisite: PSY 100.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 340 Organizational Psychology Credits: 3 (3-0-0)
Course Description: Theories and research on interpersonal relations, work group processes, decision making, power, and change strategies within organizations.
Prerequisite: (PSY 250) and (STAT 301 or STAT 311).
Registration Information: Must have concurrent registration in PSY 341.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 341 Organizational Psychology Laboratory Credit: 1 (0-2-0)
Course Description: Application of organizational psychology through simulations and field involvements.
Prerequisite: None.
Registration Information: Must have concurrent registration in PSY 340.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 350 Applied Research Methods in Psychology I Credits: 3 (3-0-0)
Course Description: Application of research methods concepts to design and conduct experiments.
Prerequisite: PSY 250 and STAT 311.
Registration Information: Enrollment in University Honors Program required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 352 Learning and Memory  Credits: 3 (3-0-0)
Course Description: Research, theory, and applications regarding conditioning, learning, and retention in animals and humans.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 354 Human-Computer Interaction  Credits: 3 (3-0-0)
Course Description: Theoretical and applied areas of psychology and computer science in the area of human-computer interaction.
Prerequisite: PSY 100.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 360 Psychology of Drug Addiction Treatment  Credits: 3 (3-0-0)
Course Description: Psychological theory and method for treating substance use addictions.
Prerequisite: PSY 320.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 362 Professional Issues in Addiction Treatment  Credits: 3 (3-0-0)
Course Description: Diversity, ethno-cultural, and ethical issues in drug addiction treatment.
Prerequisite: PSY 360, may be taken concurrently.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 364 Infectious Diseases and Substance Use  Credits: 3 (0-0-3)
Course Description: Infectious disease transmission/progression related to substance use, risk assessment and treatment of substance users in alcohol and drug treatment.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 370 Psychological Measurement and Testing  Credits: 3 (3-0-0)
Course Description: Measurement theory including scale properties, reliability, and validity; construction and evaluation of psychological tests.
Prerequisite: (PSY 100) and (STAT 301 or STAT 311).
Registration Information: Must have concurrent registration in PSY 371.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 371 Psychological Measurement and Testing Laboratory  Credit: 1 (0-2-0)
Course Description: Exercises and problems in test administration, normality, reliability, validity, and scale construction.
Prerequisite: None.
Registration Information: Must have concurrent registration in PSY 370.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 384 Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair. Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements. Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 392 Honors Seminar: Current Topics in Psychology  Credits: 2 (0-0-2)
Course Description: Research areas in psychology; reading and discussing current journal articles.
Prerequisite: PSY 100 and PSY 250.
Registration Information: Enrollment in University Honors Program required.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 401 History and Systems of Psychology  Credits: 3 (3-0-0)
Course Description: Philosophical and scientific underpinnings of psychology; major historical developments in psychology; schools of psychological thought.
Prerequisite: PSY 250.
Registration Information: Junior or senior standing. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 410 Psychobiology of Addictions  Credits: 3 (3-0-0)
Course Description: Biological basis of the psychology of addictions.
Prerequisite: PSY 250 and PSY 252.
Restriction: .
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 437 Psychology of Gender  Credits: 3 (3-0-0)
Course Description: Psychology of gender in cultural context.
Prerequisite: PSY 210.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 440 Industrial Psychology  Credits: 3 (3-0-0)
Course Description: The application of psychological theories and principles to understand how people behave in the workplace and to improve workers' productivity and well-being.
Prerequisite: (PSY 250) and (STAT 301 or STAT 311).
Registration Information: Must have concurrent registration in PSY 441.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 441 Industrial Psychology Laboratory Credit: 1 (0-2-0)
Course Description: Hands-on experience with concepts such as job analysis, performance appraisals, interviews, and training, designed to supplement information provided in PSY 440.
Prerequisite: None.
Registration Information: Must have concurrent registration in PSY 440. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 450 Applied Research Methods in Psychology II Credits: 4 (3-2-0)
Course Description: Interpretation and reporting of psychological research findings.
Prerequisite: PSY 350.
Registration Information: Must register for lecture and laboratory. Enrollment in University Honors Program required.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 452 Cognitive Psychology Credits: 3 (3-0-0)
Course Description: Human thinking processes as related to perception, attention, memory, knowledge representation, reasoning, decision making, and problem solving.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 453 Cognitive Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Exercises in laboratory research in perceptual processes, attention, memory, language, problem solving, and decision making.
Prerequisite: PSY 452, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 454 Biological Psychology Credits: 3 (3-0-0)
Course Description: Research and theory on the biological basis of behavior.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 455 Biological Psychology Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory exercises in biological psychology.
Prerequisite: PSY 454, may be taken concurrently and PSY 250.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 456 Sensation and Perception Credits: 3 (3-0-0)
Course Description: Review of research on physiological substrates of sensation; methods of scaling sensory experience; role of perception in behavioral adaptation.
Prerequisite: PSY 252.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 457 Sensation and Perception Laboratory Credits: 2 (0-4-0)
Course Description: Review of research on physiological substrates of sensation; methods of scaling sensory experience; role of perception in behavioral adaptation.
Prerequisite: PSY 456, may be taken concurrently and PSY 250.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 458 Cognitive Neuroscience Credits: 3 (3-0-0)
Course Description: Review of the human brain and its mediation of cognitive processes.
Prerequisite: PSY 252.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 459 Cognitive Neuroscience Laboratory Credits: 2 (0-4-0)
Course Description: Laboratory exercises in cognitive neuroscience.
Prerequisite: PSY 458, may be taken concurrently and PSY 250.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 460 Child Exceptionality and Psychopathology Credits: 3 (3-0-0)
Course Description: Definition and description of child exceptionality and psychopathology; theory and research in etiology, educational implications, and treatment.
Prerequisite: PSY 100.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 465 Adolescent Psychology Credits: 3 (3-0-0)
Course Description: Contemporary theory and research on adolescence including physiological and psychological changes, social influences.
Prerequisite: PSY 100.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 484 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Advanced supervised teaching, training, and discussion leadership in undergraduate courses.
Prerequisite: PSY 100.
Registration Information: Written consent of department chair required. A maximum of 10 combined credits for all 384 and 484 are counted towards graduation requirements. Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 486 Practicum Credits: Var[1-3] (0-0-0)
Course Description: Supervised work experience in approved psychological setting with periodic consultation of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 487 Internship Credits: Var[1-3] (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 488 Field Placement Credits: Var[1-3] (0-0-0)
Course Description: Supervised affiliation with and/or service work in approved psychological setting.
Prerequisite: None.
Registration Information: Enrollment restricted to students in the Addictions Counseling Concentration or Counseling/Clinical Concentration. Written consent of instructor. Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: Yes.

PSY 489A Seminar: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Modes: Instructor Option, Traditional.
Special Course Fee: No.

PSY 489B Seminar: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 489C Seminar: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 489D Seminar: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492A Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in special topics in psychology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 492B Seminar: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in perceptual and brain sciences.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492C Seminar: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 492D Seminar: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492E Seminar: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in perceptual and brain sciences.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492F Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in special topics in psychology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 492G Seminar: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 492H Seminar: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in special topics in psychology.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 495A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495C Independent Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
PSY 495D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495E Independent Study: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in perceptual and brain sciences within psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 495F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation in topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496A Group Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of applied social psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496B Group Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of cognitive psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496C Group Study: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496D Group Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 496E Group Study: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of perceptual and brain sciences within psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
PSY 496F Group Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Collective investigation of topics in psychology under direction of faculty.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 499A Research: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in applied social psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498A Research: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual and brain sciences within psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498B Research: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in cognitive psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498C Research: Counseling/Clinical Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in counseling/clinical psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 498D Research: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a formal research paper.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
PSY 515 Women's Health Credits: 3 (3-0-0)
Course Description: Current issues in women’s health.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 517 Perspectives in Global Health Credits: 3 (0-0-3)
Also Offered As: IE 517.
Course Description: Science, skills, and beliefs directed at the maintenance and improvement of health for all people.
Prerequisite: None.
Registration Information: Credit not allowed for both PSY 517 and IE 517.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 550 Responsible Conduct of Psychological Research Credit: 1 (1-0-0)
Course Description: Application of professional norms and research ethics in the conduct of psychological research.
Prerequisite: None.
Registration Information: Graduate standing or consent of instructor. This is a partial-semester course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 498A-F, PSY 499A-F; enrollment limited to one per student per majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.

Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499F Thesis: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in topics in psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 595A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Individual investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 499D Thesis: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in industrial/organizational psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499E Thesis: Perceptual and Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in perceptual/brain sciences within psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 499F Thesis: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent research project in topics in psychology, culminating in a thesis presented to a faculty committee.
Prerequisite: None.
Registration Information: Maximum of 12 credits allowed for psychology majors toward graduation for any combination of PSY 295, PSY 296, PSY 384, PSY 484, PSY 486, PSY 488, PSY 495A-F, PSY 496A-F, PSY 498A-F, PSY 499A-F; enrollment limited to one per student per semester.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 515 Women's Health Credits: 3 (3-0-0)
Course Description: Current issues in women’s health.
Prerequisite: None.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
PSY 595F  Independent Study: Special Topics in Psychology  Credits:  Var[1-3] (0-0-0)
Course Description: Individual investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 595 A  Group Study: Applied Social Psychology  Credits:  Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596 A  Group Study: Cognitive Psychology  Credits:  Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596 B  Group Study: Counseling/Clinical Psych  Credits:  Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596 C  Group Study: Industrial/Organizational Psych  Credits:  Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596 D  Group Study: Perceptual/Brain Sciences  Credits:  Var[1-3] (0-0-0)
Course Description: Collective investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 596 F  Group Study: Special Topics in Psychology  Credits:  Var[1-3] (0-0-0)
Course Description: Collective investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 600 A  Advanced Psychology: History  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 B  Advanced Psychology: Cognitive Neuroscience  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 C  Advanced Psychology: Neuropsychology  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 D  Advanced Psychology: Sensation and Perception  Credits:  3 (3-0-0)
Also Offered As: NB 600.
Course Description: Neural mechanisms of human perception; color and depth perception, pitch, loudness, and the effects of aging.
Prerequisite: PSY 100 to 799 - at least 15 credits and PSY 456.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 600D and NB 600.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 E  Advanced Psychology: Animal Learning  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 F  Advanced Psychology: Human Learning and Memory  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 G  Advanced Psychology: Social  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 H  Advanced Psychology: History  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 I  Advanced Psychology: Cognitive Neuroscience  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 J  Advanced Psychology: Neuropsychology  Credits:  3 (3-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 600 K  Advanced Psychology: Sensation and Perception  Credits:  3 (3-0-0)
Also Offered As: NB 600.
Course Description: Neural mechanisms of human perception; color and depth perception, pitch, loudness, and the effects of aging.
Prerequisite: PSY 100 to 799 - at least 15 credits and PSY 456.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 600D and NB 600.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 600H Advanced Psychology: Lifespan Development Credits: 3 (3-0-0)
Course Description: Laboratory experience using measurement concepts and procedures.
Prerequisite: PSY 600K, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 605 Applied Measurement Theory Credits: 3 (0-0-3)
Course Description: Study and application of measurement theory and methods for test construction and validation.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 605 and PSY 600K. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 611 Counseling and Clinical Pre-Practicum II Credits: 3 (3-0-0)
Course Description: Counseling and clinical techniques; assessment and intervention strategies; special applications.
Prerequisite: PSY 610.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 613 Advanced Addiction Counseling Credits: 3 (3-0-0)
Course Description: Advanced therapies used to treat individuals with substance use disorders, with an emphasis on empirically supported treatments.
Prerequisite: PSY 613.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 643 Industrial/Organizational Psychology I Credits: 3 (3-0-0)
Course Description: Integration of multiple perspectives for examining work organizations, roles, and relationships, and organizational entry and socialization.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both PSY 643 and PSY 647.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 644 Industrial/Organizational Psychology II Credits: 3 (3-0-0)
Course Description: Multiple perspectives for examining individual and organizational development, orientation to organizations, and science and practice in industrial/organizational psychology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 645 Industrial/Organizational Psychology at Work I Credits: 2 (2-0-0)
Course Description: Integrating theory, research, and practice in industrial/organizational settings. Assessment and development of applications of psychology in organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 646 Industrial/Organizational Psychology at Work II Credits: 2 (2-0-0)
Course Description: Development and application of scientific, ethical, and professional standards and competencies in applying psychology in industrial/organizational settings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 647 Applied Industrial Psychology Credits: 3 (0-0-3)
Course Description: Applications of theory and methods for recruitment, selection, training, and performance management within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 647 and PSY 643. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 648 Applied Organizational Psychology Credits: 3 (0-0-3)
Course Description: Study of work behavior, roles, and relationships within organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 652 Methods of Research in Psychology I Credits: 4 (3-2-0)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, introducing general linear model approach.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 652 and PSY 662.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 653 Methods of Research in Psychology II Credits: 4 (3-2-0)
Course Description: Advanced research designs emphasizing general linear model approach.
Prerequisite: PSY 652.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both PSY 653 and PSY 663
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655A Research Issues and Models in Psychology: Applied Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 655B Research Issues and Models in Psychology: General Experimental Credits: 3 (3-0-0)
Course Description: Generation and development of research ideas, evaluating approaches, interpreting and reporting findings.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 660 Applied Cross-Cultural Industrial/Organizational Psychology Credits: 3 (0-0-3)
Course Description: Cultural differences in the application of individual and organizational interventions to improve human and organizational effectiveness.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 647 or PSY 648. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 661 Applied Organizational Development Credits: 3 (0-0-3)
Course Description: Techniques and interventions for developing, improving and effecting change in organizations through diagnosis, planned change, and survey feedback.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 648.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 662 Applied Psychological Research Methods I Credits: 4 (0-0-4)
Course Description: Psychological research emphasizing hypothesis testing and simple research designs, the general linear model approach with emphasis on application.
Prerequisite: STAT 300 to 499 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 662 and PSY 652. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 663 Applied Psychological Research Methods II Credits: 4 (0-0-4)
Course Description: Advanced research designs emphasizing general linear model approach with emphasis on application.
Prerequisite: PSY 662.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology. Credit not allowed for both PSY 663 and PSY 653. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 664 Applied Psychological Research Design Credits: 3 (0-0-3)
Course Description: Review of scientific method, generation of hypotheses, and design of laboratory and field research studies.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; any graduate applied statistics course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 665 Succession Planning and Leadership Development Credits: 3 (0-0-3)
Course Description: Examines modern theories of leadership, strategies for succession planning, training, coaching, mentoring, professional development for leadership.
Prerequisite: PSY 648.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 648. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 666 Psychological Assessment Credits: 3 (0-0-3)
Course Description: Use of test data to determine cognitive functioning and predict behavior; supervised test administration and interpretation.
Prerequisite: PSY 670.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 667 Competency Modeling and Criterion Development Credits: 3 (0-0-3)
Course Description: Conducting job analyses and competency modeling within organizations, application of the results of those processes to criterion development.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 647. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 668 Workforce Training and Development Credits: 3 (0-0-3)
Course Description: An overview of adult learning theory, emphasizing the role of I/O psychology in identifying, designing, transferring, and evaluating training.
Prerequisite: PSY 647.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied Industrial/Organizational Psychology; PSY 647. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 669 Capstone: Practicum and Skills Development Credits: 3 (0-0-3)
Course Description: Refine I/O consulting skills through applied research/consulting projects with actual organizations, working in virtual teams with faculty mentors.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Plan C graduate program in Applied I/O Psychology; 32 hours of program requirements. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 670 Psychological Measurement-Personality Credits: 3 (3-0-0)
Course Description: Construction, administration, interpretation of objectional measures of personality including aptitudes, abilities, interests.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 672 Psychological Assessment Credits: 3 (3-0-0)
Course Description: Use of test data to determine cognitive functioning and predict behavior; supervised test administration and interpretation.
Prerequisite: PSY 670.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 675 Ethics and Professional Psychology Practice Credits: 3 (3-0-0)
Course Description: Ethical practice of psychology, duty-to-warn statutes, Colorado law, problematic ethical situations.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Registration Information: Or admission to the Professional Science Masters in Addiction Counseling
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 684 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: Supervised teaching, training and discussion leadership in undergraduate courses.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 686A Practicum: Counseling and Diagnosis I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686B Practicum: School I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686C Practicum:Industrial/Organizational I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 692B.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686D Practicum:Applied Social I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686E Practicum:Perceptual and Brain Sciences I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 686G Practicum: Cognitive I Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

PSY 692A Seminar: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692B Seminar: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692C Seminar: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692D Seminar: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692E Seminar: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 692F Seminar: Special Topics in Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699B Thesis: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699C Thesis: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699D Thesis: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 699E Thesis: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 720 Psychopathology Credits: 3 (3-0-0)
Course Description: Adult and child behavior pathology; theory, research, and methods related to etiology, defining characteristics, and maintaining causes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 722 Empirically Validated Therapies Credits: 3 (3-0-0)
Course Description: Outline of major empirically validated approaches to assessment and treatment including cognitive-behavioral therapies, interpersonal therapy.
Prerequisite: PSY 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 724 Motivational Interviewing Credits: 3 (3-0-0)
Course Description: Motivational interviewing in the treatment of individuals with substance use disorders.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 726 Neuropharmacology of Addiction Credits: 3 (3-0-0)
Course Description: Neurobiological basis of addiction and how addictive substances affect neurochemistry.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 727 Theories of Vocational Development Credits: 3 (3-0-0)
Course Description: Nature and current status of vocational development theory with implications for career counseling.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Psychology graduate students only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 729 Counseling and Psychotherapy II Credits: 3 (3-0-0)
Course Description: Theory and practice of group psychotherapy and counseling.
Prerequisite: PSY 722.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 754 Multivariate Analysis in Behavioral Sciences Credits: 3 (3-0-0)
Course Description: Multivariate analysis, including factor and component analysis, applied to psychological research.
Prerequisite: PSY 653.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

PSY 775 Diversity Issues in Counseling Credits: 3 (3-0-0)
Course Description: Diversity issues in clients and counselors such as gender, race, age, sexual orientation, education, religion, disability, socioeconomic status.
Prerequisite: PSY 611.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 776 Business and Practice of Addiction Counseling  Credits: 3 (3-0-0)  
Course Description: Business aspects and professional development issues associated with a career in addiction counseling.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Psychology graduate students or admission to the Professional Science Masters in Addiction Counseling.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PSY 784 Supervised College Teaching  Credits: Var[1-18] (0-0-0)  
Course Description: Philosophy, approaches, and techniques of college-level instruction; supervised teaching with consultation of faculty.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786A Advanced Practicum: Counseling and Diagnosis II  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686A.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786B Advanced Practicum: Industrial/Organizational II  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686C.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786D Advanced Practicum: School II  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686D.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786E Advanced Practicum: Clinical  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786F Advanced Practicum: Supervision  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686A or PSY 686C or PSY 686D or PSY 686E or PSY 686F or PSY 686G.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786G Advanced Practicum: Applied Social II  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686E.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786H Advanced Practicum: Perceptual and Brain Sciences II  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686F.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786I Advanced Practicum: Cognitive II  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 686G.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 786J Advanced Practicum: Vocational Assessment  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: PSY 610 and PSY 727.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 787 Internship  Credits: Var[1-18] (0-0-0)  
Course Description: Supervised work experience under departmental guidelines in approved psychological agency or setting.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PSY 792A Advanced Seminar: Applied Social Psychology  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PSY 792B Advanced Seminar: Cognitive Psychology  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.
PSY 792C Advanced Seminar: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description: Independent investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792D Advanced Seminar: Industrial/Organizational Psychology Credits: Var[1-18] (0-0-0)
Course Description: Independent investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792E Advanced Seminar: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)
Course Description: Independent investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 792F Advanced Seminar: Special Topics in Psychology Credits: Var[1-18] (0-0-0)
Course Description: Independent investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 793 Clinical Supervision of Addiction Counseling Credits: 3 (3-0-0)
Course Description: Tools and models in the supervision and treatment of addictions.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Professional Science Masters in Addiction Counseling.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 795A Independent Study: Applied Social Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795B Independent Study: Cognitive Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795C Independent Study: Counseling/Clinical Psych Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in counseling/clinical psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795D Independent Study: Industrial/Organizational Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in industrial/organizational psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795E Independent Study: Perceptual/Brain Sciences Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a topic in perceptual and brain sciences under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 795F Independent Study: Special Topics in Psychology Credits: Var[1-3] (0-0-0)
Course Description: Independent investigation of a special topic in psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

PSY 799A Dissertation: Applied Social Psychology Credits: Var[1-18] (0-0-0)
Course Description: Independent investigation of a topic in applied social psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799B Dissertation: Cognitive Psychology Credits: Var[1-18] (0-0-0)
Course Description: Independent investigation of a topic in cognitive psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PSY 799C Dissertation: Counseling Psychology Credits: Var[1-18] (0-0-0)
Course Description: Independent investigation of a topic in counseling psychology under direction of faculty.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
PSY 799D Dissertation: Industrial/Organizational Psych Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PSY 799E Dissertation: Perceptual and Brain Sciences Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

**Public Health-PBHL (PBHL)**  

**Courses**  

PBHL 516 Public Health Foundations Credits: 2 (2-0-0)  
Course Description: Introduction to public health history, concepts, principles, and current trends.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing; Colorado School of Public Health student. Credit not allowed for both PBHL 516 and PSY 516A-C.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PBHL 530 Environmental Public Health and Policy Credits: 3 (3-0-0)  
Course Description: Major concepts, methodologies and issues in the field of environmental public health.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing; Colorado School of Public Health student. Credit not allowed for both ERHS 520 and PBHL 530.  
Term Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PBHL 540 One Health in Public Health Credits: 3 (3-0-0)  
Course Description: One Health history and concepts for public health professionals.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.  
Registration Information: Bachelor’s degree. Sections may be offered: Online.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PBHL 550 Applied Behavior Change Theory Credits: 3 (3-0-0)  
Course Description: Introduction and application of community public health strategies and interventions including systems level changes.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing; Colorado School of Public Health student. Credit not allowed for both HES 556 and PBHL 550.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PBHL 560 Quantitative Methods in Public Health Credits: 3 (3-0-0)  
Course Description: Introduction to the major concepts and applications in public health data interpretation and analysis.  
Prerequisite: None.  
Registration Information: Graduate standing; enrollment in Colorado School of Public Health. Written consent of instructor required. Credit not allowed for VS 562, EDRM 606 and PBHL 560.  
Term Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PBHL 570 Epidemiology for Public Health Credits: 3 (3-0-0)  
Course Description: Descriptive and analytic methods in epidemiology and their application to research and practice in the field of public health.  
Prerequisite: None.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PBHL 580 Field Methods for Disease Investigation Credits: 3 (3-0-0)  
Course Description: Application of epidemiologic tools to collect, analyze, and interpret data and test results important for disease surveillance and investigation.  
Prerequisite: None.  
Restriction: Must not be a: Graduate, Professional.  
Registration Information: One epidemiology course; Bachelor’s degree required. Sections may be offered: Online.  
Term Offered: Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PBHL 620 Epidemiology for Public Health Practicum Credits: 2 (0-0-2)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Admission to Master of Public Health program.  
Term Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PBHL 686 Public Health Practicum Credits: 2 (0-0-2)  
Course Description:  
Prerequisite: None.  
Restriction: Must not be a: Graduate, Professional.  
Registration Information: One epidemiology course; Bachelor’s degree required. Sections may be offered: Online.  
Term Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

PBHL 692 Public Health Seminar Credits: Var[1-6] (0-0-0)  
Course Description: Seminars pertaining to current public health issues. Topics may vary.  
Prerequisite: None.  
Restriction: Must be a: Graduate, Graduate cooperative program, Professional.  
Registration Information: Graduate standing. May be taken for credit up to 3 times; maximum of 9 credits allowed in course.  
Term Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

PBHL 695 Public Health Independent Study Credits: Var[1-6] (0-0-0)  
Course Description:  
Prerequisite: None.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: Graduate standing; Colorado School of Public Health student. May be taken for credit up to 3 times; maximum of 9 credits allowed.  
Term Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.
PBHL 696 Public Health Group Study  Credits: Var[1-6] (0-0-0)
Course Description: Group study on current public health issues; topics will vary.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Graduate standing. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

PBHL 698 Public Health Capstone  Credits: 2 (0-0-2)
Course Description: Capstone project for Master of Public Health students.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: Admission to Master of Public Health program required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

### Rangeland Ecosystem Science-RS (RS)

#### Courses

**RS 300 Rangeland Conservation and Stewardship**  Credits: 3 (3-0-0)
Course Description: Conservation and management of rangeland-ecosystem values using sustainable practices.
Prerequisite: BZ 120 or LIFE 102.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

**RS 310 Rangeland and Forest Ecogeography**  Credits: 3 (2-2-0)
Also Offered As: F 310.
Course Description: Distribution of wildland plant communities and identification of important grasses, forbs, shrubs, and trees common to North America.
Prerequisite: BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102.
Registration Information: Must have concurrent registration in RS 312. Must register for lecture and laboratory. Credit not allowed for both RS 310 and F 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**RS 312 Rangeland Plant Identification Lab**  Credit: 1 (0-2-0)
Course Description: Identification of characteristic grasses, forbs, and shrubs common to North American rangelands.
Prerequisite: RS 310, may be taken concurrently.
Registration Information: Must have concurrent registration in RS 310.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

**RS 329 Rangeland Assessment**  Credit: 1 (0-3-0)
Course Description: Five-day intensive field-based course on principles of rangeland ecosystem assessment.
Prerequisite: (F 310 or RS 310) and (RS 300 and SOCR 240).
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.

**RS 331 Wildland Plants and Plant Communities**  Credits: 3 (2-2-0)
Course Description: Distribution of non-forested wildland plant communities and important plant species in the western United States.
Prerequisite: BZ 223 or NR 220.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

**RS 351 Wildland Ecosystems in a Changing World**  Credits: 3 (2-2-0)
Course Description: Understanding and conserving non-forested wildland ecosystems, processes, and services under changing environmental conditions.
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (SOCR 240).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

**RS 400 Rangeland Improvements**  Credits: 2 (2-0-0)
Course Description: Improvement of rangelands through biological and cultural methods; management of improved rangelands.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

**RS 420 Grass Taxonomy**  Credits: 3 (1-4-0)
Course Description: Anatomy, morphology, and identification of grasses.
Prerequisite: BZ 223.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

**RS 432 Rangeland Measurements and Monitoring**  Credits: 2 (1-3-0)
Course Description: Vegetation sampling and field measurements emphasizing applications for monitoring and adaptive management.
Prerequisite: (NR 220 and RS 300, may be taken concurrently) and (STAT 201 or STAT 301 or STAT 307).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

**RS 452 Rangeland Herbivore Ecology and Management**  Credits: 3 (3-0-0)
Course Description: Ecology and management of large ungulate herbivores including consumer functions at organismal and ecosystem levels.
Prerequisite: (RS 300) and (LAND 220 or LIFE 220 or LIFE 320).
Registration Information: Voluntary field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
RS 470  Rangeland Economics and Analysis  Credits: 2 (2-0-0)
Course Description: Economics of rangeland resource use; analytical techniques for allocation of rangeland resources.
Prerequisite: (AREC 202 or ECON 202) and (RS 300).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 471  Rangeland Planning and Grazing Management  Credits: 2 (2-0-0)
Course Description: Definition of grazing management, grazing systems. Synthesis of animal, plant responses to grazing management. Structure, function of rangeland planning.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 472  Rangeland Ecosystem Planning  Credits: 4 (1-6-0)
Course Description: Range allotment, ranch, and restoration planning.
Prerequisite: RS 471.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 478  Ecological Restoration  Credits: 3 (3-0-0)
Course Description: Analysis of environmental factors influencing restoration of disturbed lands and practices for successful restoration of disturbed ecosystems.
Prerequisite: (BZ 450 or LAND 220 or LIFE 220 or LIFE 320) and (SOCR 240).
Registration Information: Credit not allowed for both RS 478 and NR 678.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 495  Independent Study-Rangeland Ecosystems  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 496  Group Study-Rangeland Ecosystem  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 500  Advanced Rangeland Management  Credits: 3 (3-0-0)
Course Description: Rangeland management concepts.
Prerequisite: LAND 220 or LIFE 320 or NR 220 or LIFE 220.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RS 501  Range Habitat Manipulation  Credits: 3 (3-0-0)
Course Description: Improvement of range habitats and effects on ecosystem components.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 520  Range Issues and Policy  Credits: 2 (2-0-0)
Course Description: Explores and evaluates current issues and policies concerning range use.
Prerequisite: RS 300 or SOCR 320.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

RS 531  World Grassland Ecogeography  Credits: 3 (2-3-0)
Course Description: Distribution, climate, and structure of the world's major grasslands with emphasis on North America.
Prerequisite: BZ 223.
Registration Information: Must register for lecture and laboratory. Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 532  Rangeland Ecosystem Sampling  Credits: 3 (1-3-1)
Course Description: Measurement, analysis techniques for rangeland vegetation. Applications to management emphasized.
Prerequisite: (STAT 301) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Registration Information: Credit not allowed for both RS 532 and RS 432. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 552  Rangeland Ecosystem Sampling  Credits: 3 (1-3-1)
Course Description: Measurement, analysis techniques for rangeland vegetation. Applications to management emphasized.
Prerequisite: (STAT 301) and (LAND 220 or LIFE 320 or NR 220 or LIFE 220).
Registration Information: Credit not allowed for both RS 532 and RS 432. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

RS 565  Riparian Ecology and Management  Credits: 3 (2-2-0)
Course Description: Analysis of interactions among biotic and abiotic processes as relates to the ecology and management of riparian systems, emphasizing case studies.
Prerequisite: LAND 220 or LIFE 220 or LIFE 320.
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
RS 630  Ecology of Grasslands and Shrublands  Credits: 3 (3-0-0)
Course Description: Distributions and climatic controls on grassland and
shrubland plant communities.
Prerequisite: NR 565.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RS 640  Vegetation-Environment Analysis  Credits: 3 (3-0-0)
Course Description: Multivariate analyses and ecological interpretations
of vegetation communities.
Prerequisite: STAT 301.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

RS 651  Primary Production and Decomposition  Credits: 4 (3-2-0)
Course Description: Energy transformations within primary producer
compartment; dissipation of ecosystem biomass by decomposers,
mineralization.
Prerequisite: BZ 440 and SOCR 100 to 481 - at least 1 course.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RS 693  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 695  Independent Study-Rangeland Ecosystem  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 698  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 793  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 795  Independent Study-Rangeland Ecosystem  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 798  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

RS 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Real Estate-REL (REL)

Courses
REL 360  Real Estate Principles  Credits: 3 (3-0-0)
Course Description: Broad survey of real estate emphasizing land use,
urban structure and growth, market analysis, real estate finance and
valuation, and property rights.
Prerequisite: AEC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

REL 367  Real Estate Law  Credits: 3 (3-0-0)
Course Description: Legal regulations applicable to real property
ownership and transfer, to real estate agents, and to use of real property.
Prerequisite: BUS 205 or BUS 260 or HDFS 403.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
REL 430  Real Estate Analysis and Marketing  Credits: 3 (3-0-0)  
Course Description: Analysis of real estate markets, including development feasibility and managing risk, and their relation to urban economic trends.  
Prerequisite: REL 360.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

REL 435  Real Estate Marketing and Brokerage  Credits: 2 (2-0-0)  
Course Description: Practitioner focus including legal forms, valuation, sales techniques, escrow, fiduciary requirements, start-to-finish real estate project.  
Prerequisite: REL 360.  
Registration Information: This is a partial-semester course. Sections may be offered: Online.  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

REL 440  Real Estate Development  Credits: 3 (3-0-0)  
Course Description: Development process including urban dynamics, architecture, construction, law, public approvals, financing, marketing, and property management.  
Prerequisite: FIN 300 and REL 360 and REL 460.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

REL 452  Real Estate Appraisal Principles  Credits: 2 (2-0-0)  
Also Offered As: AREC 452.  
Course Description: Theoretical principles that underlie real estate appraisal methods.  
Prerequisite: (AREC 202 or ECON 202) and (AREC 305 or REL 360).  
Registration Information: Credit not allowed for both REL 452 and AREC 452. Sections may be offered: Online.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

REL 453  Real Estate Appraisal Practices  Credits: 2 (2-0-0)  
Also Offered As: AREC 453.  
Course Description: Procedures and practices used in real estate appraisal.  
Prerequisite: AREC 452 or REL 452, may be taken concurrently.  
Restriction:  
Registration Information: Credit not allowed for both REL 453 and AREC 453. Sections may be offered: Online.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.  

REL 460  Real Estate Finance and Investment  Credits: 3 (3-0-0)  
Course Description: Financing of real estate resources: real estate financial markets, policies; use of leverage and real estate investment analysis in real estate investment programs.  
Prerequisite: (FIN 300 or FIN 305) and (REL 360).  
Term Offered: Fall.  
Grade Mode: Traditional.  
Special Course Fee: No.  

REL 487  Real Estate Internship  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Maximum of 3 credits allowed in course.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

REL 495  Real Estate Independent Study  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Maximum of 3 credits allowed in course.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

REL 496  Real Estate Group Study  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: None.  
Registration Information: Maximum of 3 credits allowed in course.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.  

REL 601  Fundamentals of Real Estate Finance  Credit: 1 (1-0-0)  
Course Description: Valuation-oriented study of real estate concepts and principles, including legal, regulatory, finance, market and financial analysis.  
Prerequisite: BUS 601.  
Restriction: Must be a: Graduate, Professional.  
Registration Information: This is a partial-semester course. Sections may be offered: Online.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.  

Restaurant + Resort Mgmt-RRM (RRM)  

Courses  
RRM 101  Hospitality Industry  Credits: 3 (3-0-0)  
Course Description: Food service, lodging, and tourism industries; exploration of various industry segments and career opportunities.  
Prerequisite: None.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
RRM 200 Hotel Operations  Credits: 3 (3-0-0)
Course Description: Front office and room management as related to resorts and hotels. Computer application, financial controls, employee and guest relations.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 310 Food Service Systems-Operations  Credits: 3 (3-0-0)
Course Description: Technical operations: menu planning, evaluation, recipe standardization, forecasting, food cost, sanitation, hospital food distribution systems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 311 Food Service Systems-Production and Purchasing  Credits: 3 (3-0-0)
Course Description: Quantity food production principles, purchasing specifications, market channels.
Prerequisite: RRM 310.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 312 Hospitality Human Resource Management  Credits: 3 (2-0-1)
Course Description: Principles and practices of employee management in the hospitality industry including employment process, training, legal aspects, performance.
Prerequisite: RRM 310.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 330 Alcohol Beverage Control and Management  Credits: 2 (2-0-0)
Course Description: Classification, production, and service of controlled beverages; management of facilities and people; safe service training; financial controls.
Prerequisite: CHEM 103, may be taken concurrently or CHEM 107, may be taken concurrently or CHEM 111, may be taken concurrently.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

RRM 340 Restaurant Operations  Credits: 4 (0-8-0)
Course Description: Principles, practices, philosophies, systems for daily operation of casual or fine dining restaurant; focus on developing solutions to problems.
Prerequisite: RRM 101, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 345 Food, Beverage, and Labor Cost Control  Credits: 3 (3-0-0)
Course Description: Cost control for food, beverage, and labor in the hospitality industry.
Prerequisite: ACT 205 and CS 110.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 350 Restaurant and Resort Marketing  Credits: 3 (3-0-0)
Course Description: Restaurant and resort operations marketing, including planning, promotion, and special industry considerations.
Prerequisite: RRM 101.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 386 Practicum  Credits: 3 (0-0-9)
Course Description: Practicum in Hospitality Management.
Prerequisite: RRM 101.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

RRM 400 Food and Society  Credits: 3 (2-0-1)
Course Description: Exploration of the influence of food, dining, and nutrition on cultural aspects of the human experience.
Prerequisite: (SOC 100 or PSY 100) and (AMST 100 or AMST 101 or ANTH 140 or NR 320 or HIST 252 or HIST 255 or ETST 250 or ETST 252 or ETST 255 or HIST 101 or HIST 150 or HIST 151 or HIST 171 or HIST 250 or HIST 121) and (AGRI 270 or HIST 170 or AM 250 or ANTH 200 or LJPN 250 or LB 170 or LB 171 or ETST 100 or PHIL 170 or SA 482 or E 238 or E 245 or HIST 100 or ETST 205 or ETST 253 or ETST 256 or PF 110 or HIST 115 or HIST 120 or IE 116 or IE 370 or HORT 171 or SOCR 171 or SOCR 205 or POLS 232 or POLS 241 or ECON 211 or LCHI 250 or LARA 250 or LFRE 250 or LGER 250 or LRUS 250 or LSPA 250 or AGRI 116).
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 415 Catering Techniques and Culinary Arts  Credits: 3 (0-6-0)
Course Description: Management of advanced techniques in culinary technique; catering of food and beverages for special functions.
Prerequisite: RRM 311.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

RRM 450 Leadership in the Hospitality Industry  Credits: 3 (3-0-0)
Course Description: Exploration of leadership skills, their relationship to ethics through self-analysis, and leading change in the hospitality industry.
Prerequisite: RRM 310 and MGT 305.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

RRM 460 Event and Conference Planning  Credits: 3 (3-0-0)
Also Offered As: NRRT 460.
Course Description: Foundation in planning, organizing, and producing special events and conferences. Functions and strategies for effective event management.
Prerequisite: NRRT 270 or RRM 101.
Registration Information: Credit not allowed for both RRM 460 and NRRT 460.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Courses

SOWK 110 Contemporary Social Welfare (GT-SS1) Credits: 3 (2-0-1)
Course Description: Principles, values and institutions of U.S. social welfare in context of human need within family, groups, and society.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

SOWK 150 Introduction to Social Work Credits: 3 (3-0-0)
Course Description: Introduction to social work; history of social welfare in the U.S.; overview of knowledge, values, skills, practice settings and populations served.
Prerequisite: (PSY 100, may be taken concurrently) and (SOC 100, may be taken concurrently or SOC 105, may be taken concurrently).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 233 Human Behavior in the Social Environment Credits: 3 (3-0-0)
Course Description: Understanding human behavior theory relevant to social work practice.
Prerequisite: HDFS 101, may be taken concurrently and SOWK 150, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 286A Practicum I Credits: 3 (0-0-3)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior.
Prerequisite: SOWK 233, may be taken concurrently.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 286B Practicum II Credits: 3 (0-0-3)
Course Description: Introductory social work practice skills in communication, relationship development, and professional behavior.
Prerequisite: SOWK 233, may be taken concurrently.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 300 Research in Applied Professions Credits: 3 (3-0-0)
Course Description: Application of social science research methodology to applied professions including problem formulation, research design, and data collection.
Prerequisite: None.
Registration Information: Completion of AUCC 1B Mathematics requirement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 330 Human Diversity Practice Issues Credits: 3 (3-0-0)
Course Description: Knowledge about human differences and similarities essential for social work practice.
Prerequisite: SOWK 233, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 400 Research Methods in Food and Nutrition Credits: 3 (3-0-0)
Course Description: Application of social science research methodology.
Prerequisite: SRM 412 or SRM 415.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOWK 400 Understanding Food Credits: 3 (3-0-0)
Course Description: Understanding human behavior theory relevant to social work practice.
Prerequisite: SOWK 233, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 487 Internship: Hospitality Management Credits: 3 (0-0-9)
Course Description: Application and synthesizing service knowledge and management functions; project discussions, benchmark presentations, execution of a capstone project.
Prerequisite: MKT 305.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

SOWK 500 Understanding Food Credits: 3 (3-0-0)
Course Description: Understanding human behavior theory relevant to social work practice.
Prerequisite: SOWK 233, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 510 Foodservice Management Credits: 2 (1-0-1)
Course Description: Analysis of a wide variety of foodservice operations, including procurement, forecasting, operational design, and menu planning.
Prerequisite: NRRT 402 or NRRT 471.
Registration Information: This is a partial-semester course.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 520 Lodging Management Credits: 2 (1-0-1)
Course Description: Operating standards and practices essential to the profitability of a hotel, lodging, and accommodation enterprise.
Prerequisite: NRRT 442 or NRRT 471.
Registration Information: This is a partial-semester course.
Terms Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 604 Research Methods in Food and Nutrition Credits: 3 (3-0-0)
Course Description: Research techniques used in food and nutrition disciplines. Emphasis on design, preparation, and evaluation of research.
Prerequisite: EDRM 606 or STAT 301 or STAT 311.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 686 Practicum-Food Service Management Credit: 1 (0-4-0)
Course Description: Food production, menu planning, nutritional analysis and food costing.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 700 Research in Applied Professions Credits: 3 (3-0-0)
Course Description: Application of social science research methodology to applied professions including problem formulation, research design, and data collection.
Prerequisite: None.
Registration Information: Completion of AUCC 1B Mathematics requirement.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 340  Generalist Practice-Individuals and Families  Credits: 3 (0-0-3)
Course Description: Knowledge and techniques used in applying the
generalist planned change process to individual and family system
assessments and interventions.
Prerequisite: SOWK 286B, may be taken concurrently.
Registration Information: Progression into the major.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 341  Generalist Practice-Small Groups  Credits: 3 (0-0-3)
Course Description: Within a generalist framework, focuses on the
knowledge, skills and competencies needed for the planned change
process in groups.
Prerequisite: SOWK 340, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 342  Generalist Practice-Organizations/Communities  Credits: 3 (1-0-2)
Course Description: Knowledge regarding the planned change process
with organizations and communities.
Prerequisite: SOWK 340, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 350  Legal Issues in Human Services  Credits: 3 (0-0-3)
Course Description: Legal principles, procedures, and issues relevant to
social work including policy research and courtroom testimony.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 352  Indigenous Women, Children and Tribes  Credits: 3 (3-0-0)
Also Offered As: ETST 352.
Course Description: Historical and contemporary lives of women,
children, and tribal communities.
Prerequisite: None.
Registration Information: Credit not allowed for both SOWK 352 and
ETST 352.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371A  Social Work with Selected Populations: Children and
Families  Credits: 3 (3-0-0)
Course Description: Application of practice processes with children and
families.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371B  Social Work with Selected Populations: Juvenile
Offenders  Credits: 3 (3-0-0)
Course Description: Application of practice processes with juvenile
offenders.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371C  Social Work with Selected Populations: Adult
Offenders  Credits: 3 (3-0-0)
Course Description: Application of practice processes with adult
offenders.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371D  Social Work with Selected Populations: Substance
Abusers  Credits: 3 (3-0-0)
Course Description: Application of practice processes with substance
abusers.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 371E  Social Work with Selected Populations: Social
Gerontology  Credits: 3 (3-0-0)
Course Description: Application of practice processes with selected
populations.
Prerequisite: HDFS 101.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 384  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Assist instructor in teaching selected classes, group
training, or discussion group leadership.
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384
and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 410  Social Welfare Policy  Credits: 3 (2-0-1)
Course Description: Issues and processes shaping social welfare
institutions; definitions of social welfare policy; analytical framework for
policy analysis.
Prerequisite: SOWK 342, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 450  International Social Welfare and Development Credits: 3 (2-0-1)
Also Offered As: IE 450.
Course Description: Framework of social welfare and development in international area; social need with focus on cultures/countries in transition.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOWK 450 and IE 450.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 482A Social Work in Costa Rica Credits: 3 (1-0-2)
Course Description: International social work practice through exposure to culturally diverse communities in Costa Rica. Examine social problems, social action, and social injustice in the context of global interdependence.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Enrollment in Bachelor of Social Work or Master of Social Work degree program. Completed letter of application.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 488 Field Placement Credits: Var[5-10] (0-0-0)
Course Description: Engagement, assessment, interventions, and evaluation at multiple levels of service as well as mastery of foundation practice roles.
Prerequisite: SOWK 300 and SOWK 341 and SOWK 330 and SOWK 410.
Registration Information: Maximum of 10 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

SOWK 492 Seminar Credits: 3 (0-0-3)
Course Description: Integrates theory with social work core competencies and practice behaviors while in field placement.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 495 Independent Study Credits: Var[1-12] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 500 Principles and Philosophy of Social Work Credits: 3 (3-0-0)
Course Description: Knowledge, values, history, and philosophy of social work.
Prerequisite: None.
Registration Information: Admission to the MSW program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 511 Generalist Practice-Small Client Systems Credits: 3 (0-0-3)
Course Description: Generalist practice perspective. Practice knowledge and skills related to intervention with individuals and families within a systems framework.
Prerequisite: SOWK 500, may be taken concurrently and SOWK 515, may be taken concurrently.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 512 Small Client Systems Skills Laboratory Credit: 1 (0-2-0)
Course Description: Application of communication and relationship skills for professional practice.
Prerequisite: SOWK 511, may be taken concurrently and SOWK 588, may be taken concurrently.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 515 Theoretical Foundations for Social Work Credits: 4 (3-0-1)
Course Description: Socio-behavioral principles relevant to generalist social work practice.
Prerequisite: SOWK 500, may be taken concurrently.
Registration Information: Blended format course is a partial-semester course. Lecture will be online and recitation will be face-to-face.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 520 Social Welfare Policy Analysis Credits: 3 (2-0-1)
Course Description: Historical analysis and impact of social welfare policy.
Prerequisite: None.
Registration Information: Admission to the MSW program. Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 550 Animal Assisted Therapy/Human-Animal Bond Credits: 3 (2-0-1)
Course Description: Nature of human-animal bond and animal assisted therapy as an intervention method.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 551 Fundamentals of Mediation Credits: 3 (1-0-2) 
Course Description: Knowledge and skills essential to the successful application of mediation for a wide variety of interpersonal conflicts. 
Prerequisite: None. 
Registration Information: Bachelor’s degree. Must register for lecture and recitation. Sections may be offered: Online. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 552 Conflict Management: Health and Elder Care Credits: 3 (1-0-2) 
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in healthcare and eldercare settings. 
Prerequisite: SOWK 551. 
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 553 Multi-Party Conflict Resolution Credits: 3 (2-0-1) 
Course Description: Theories, models, and skills required for design and guidance of multi-party conflict resolution in group, community and organizational settings. 
Prerequisite: SOWK 551. 
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 554 Conflict Resolution in the Workplace Credits: 3 (1-0-2) 
Course Description: Knowledge, values and skills necessary for the practice of conflict resolution in the workplace. 
Prerequisite: SOWK 551. 
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 555 Divorce and Family Mediation Credits: 3 (1-0-2) 
Course Description: Knowledge and skills essential to the practice of family mediation including divorce and child custody. 
Prerequisite: SOWK 551. 
Registration Information: Must register for lecture and recitation. Sections may be offered: Online. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 556 Social Work Practice in Schools Credits: 3 (0-0-3) 
Course Description: Knowledge and skills essential to the practice of social work in educational settings. Topics explored: historical, legal, structural, and cultural context of social work in schools, the impact of disability on an individual and a family, and current issues challenging the practitioner in school settings. 
Prerequisite: None. 
Registration Information: This is a partial semester course. Offered as an online course only. Completed master’s degree in social work or enrollment in a master’s in social work program. 
Terms Offered: Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 557 School/Community: People with Disabilities Credits: 3 (0-0-3) 
Course Description: Teamwork approach to serving persons with special needs; values, issues and best practices related to creating desirable futures for them. 
Prerequisite: None. 
Registration Information: Sections may be offered: Online. 
Terms Offered: Fall, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 558 Field Placement Credits: Var[1-6] (0-0-0) 
Course Description: Supervised professional practice. 
Prerequisite: SOWK 512, may be taken concurrently and SOWK 611, may be taken concurrently. 
Registration Information: Maximum of 6 credits allowed in course. 
Terms Offered: Fall, Spring, Summer. 
Grade Mode: Instructor Option. 
Special Course Fee: Yes.

SOWK 559 Workshop Credits: Var[1-6] (0-0-0) 
Course Description: 
Prerequisite: None. 
Terms Offered: Fall, Spring. 
Grade Mode: Instructor Option. 
Special Course Fee: No.

SOWK 560 Social Work Practice in Schools Credits: 3 (3-0-0) 
Course Description: Social work research: role of practitioners as consumers and initiators of research. 
Prerequisite: STAT 100 to 799 - at least 1 course. 
Restriction: Must be a: Graduate, Professional. 
Registration Information: Sections may be offered: Online. 
Terms Offered: Fall, Spring. 
Grade Mode: Traditional. 
Special Course Fee: No.

SOWK 561 Methods of Research I Credits: 3 (3-0-0) 
Course Description: Data analysis, computer processing in social work research, and methods for evaluating one’s own practice. 
Prerequisite: SOWK 600. 
Restriction: Must be a: Graduate, Professional. 
Terms Offered: Spring, Summer. 
Grade Mode: Traditional. 
Special Course Fee: No.
SOWK 602A Macro-Level Social Work Practice Research Credits: 2 (0-0-2)
Course Description: Design and proposal of needs assessment, program evaluation, or community research.
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 602B Macro-Level Social Work Practice Research Credits: 2 (0-0-2)
Course Description: Implementation of proposed needs assessment, program evaluation, or community research.
Prerequisite: SOWK 602A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 603A Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
SOWK 603B Direct Practice: Assessment and Evaluation Credits: 2 (0-0-2)
Course Description: Selection and application of techniques for monitoring and evaluating interventions with individuals, families, and groups.
Prerequisite: SOWK 603A.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in SOWK 688.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.
SOWK 611 Generalist Practice-Large Client Systems Credits: 3 (1-0-2)
Course Description: Practice knowledge and skills related to intervention with task groups, coalitions, organizations, and communities.
Prerequisite: SOWK 511.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 630 Advanced Generalist Practice with Individuals Credits: 2 (1-0-1)
Course Description: Knowledge and skills appropriate for clinical assessments and interventions with individuals focusing on contemporary theoretical constructs.
Prerequisite: (SOWK 588 and SOWK 611 or SOWK 571 and SOWK 572) and (SOWK 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 631 Advanced Practice with Communities Credits: 2 (1-0-1)
Course Description: Knowledge, skills, and values regarding the planned change process with communities.
Prerequisite: (SOWK 588 or SOWK 571 and SOWK 572) and (SOWK 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 632 Advanced Practice: Manager/Administrator Credits: 3 (1-0-2)
Course Description: Knowledge, values, and skills of organizational practice for a social work manager/administrator.
Prerequisite: (SOWK 588 or SOWK 571 and SOWK 572) and (SOWK 601).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 633 Advanced Practice: Social Welfare Policy Credits: 2 (0-0-2)
Course Description: Application of social welfare policy analysis models; normative aspects of policy analysis and assessment skills.
Prerequisite: (SOWK 601) and (SOWK 571 and SOWK 572 or SOWK 520 and SOWK 588 and SOWK 611).
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 634 Advanced Practice with Families and Groups Credits: 3 (1-0-2)
Course Description: Apply engagement, assessment, and intervention skills, theoretical models, and evidence-based practice approaches in work with families and groups.
Prerequisite: SOWK 630.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 640 Contemporary Issues in Military Culture Credits: 3 (0-0-3)
Course Description: Exploration of multiple issues informing social work practice with military and veteran populations including ethical decision making in military social work, resources for veterans, challenges faced by women in the military, secondary trauma, and problems veterans face, such as homelessness, addiction, reintegration, mental illness, suicide. Military culture, the different branches of the military, and generational differences among military personnel will be examined.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 641 Military Family Systems Credits: 3 (0-0-3)
Course Description: Exploration of effectively engaging with military families. Strategies to assess and intervene with military and veteran couples, children, and families will be examined. Exploration of topics of integration and reintegration; grief, loss, and bereavement; family-centered programs; support of guard/reserve families; deployment; support of veteran caregivers; and effective interventions through a systems framework.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 642 Clinical Intervention with Military Personnel Credits: 3 (0-0-3)
Course Description: Clinical framework for working with members of the military including active duty, veterans, and military families, applied to examine common diagnoses and effective interventions, including post-traumatic stress disorder, traumatic brain injury, substance abuse, and suicide. Cognitive behavioral therapy, reactive exposure behavioral therapy, exposure therapy, rehabilitation, animal-assisted therapy, and additional therapies will be investigated.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 660 Nonprofit Program Development Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit program development and management.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 661 Nonprofit Financial Development Credits: 3 (0-0-3)
Course Description: Application of the tools, knowledge, and understanding of how to provide strength-based nonprofit financial development.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 662 Nonprofit Volunteer Development & Management Credits: 3 (0-0-3)
Course Description: Theoretical framework for understanding volunteerism and practice skills for building and managing an effective volunteer program.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial semester course. Offered as an online course only.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 675 Psychopathology and Community Health Credits: 3 (0-0-3)
Course Description: Foundation for diagnosing mental and emotional disorders relevant to community behavioral health practice with individuals.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: This is a partial-semester course. Sections may be offered: Online.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 676 Psychopharmacology and Community Health Credits: 3 (0-0-3)
Course Description: Foundation in psychopharmacology (i.e. prescribed psychotropic drugs) for non-medically trained professionals practicing in behavioral health.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree. This is a partial-semester course. Online only course.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 677 Trauma-Informed Care Credits: 3 (0-0-3)
Course Description: Establishes a foundation for providing trauma mental health services to individuals, families, groups and organizations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Bachelor’s degree. This is a partial-semester course. Online only course.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOWK 684  Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 10 credits allowed.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

SOWK 688  Field Placement  Credits: Var[1-8] (0-0-0)
Course Description: Integrates and applies competencies and measurable practice behaviors comprising knowledge, values, and skills in social work practice.
Prerequisite: SOWK 512 and SOWK 601 or SOWK 571 and SOWK 572.
Restriction: Must be a: Graduate.
Registration Information: Maximum of 15 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

SOWK 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 696  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 698  Research  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: SOWK 601.
Restriction: Must be a: Graduate, Professional.
Registration Information: Maximum of 6 credits allowed in course.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 701  Contemporary Issues-Social Work Education  Credits: 3 (1-0-2)
Course Description: Issues and trends current impacting professional education for social work practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. MSW degree.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 702  Social Welfare Policies in Selected Countries  Credits: 3 (1-0-2)
Course Description: Social welfare policy analysis and impact on professional social work practice.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 703  Theoretical Analysis of Social Work Practice  Credits: 3 (1-0-2)
Course Description: Social work practice theories; building, evaluating, and teaching for social work educators.
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 704  Theoretical Foundations of Social Work  Credits: 3 (1-0-2)
Course Description: Nature and processes of theory building in social work. Issues of epistemology, logic, political and moral philosophy.
Prerequisite: SOWK 701.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 784  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 786  Research Practicum  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOWK 701 and EDRM 700 and EDRM 704.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOWK 792  Seminar  Credits: Var[1-4] (0-0-0)
Course Description:
Prerequisite: SOWK 701.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
SOWK 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOWK 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

**Sociology-SOC (SOC)**

**Courses**

SOC 100 General Sociology (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of human societies in the U.S. and abroad; major institutions, groups, and interaction patterns from the sociological perspective.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 105 Social Problems (GT-SS3) Credits: 3 (3-0-0)
Course Description: Analysis of global and domestic social problems.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 192 Civic Culture and Social Responsibility Credits: 3 (0-0-3)
Course Description: Erosion of civility in society with particular emphasis on civic culture on the university campus.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 205 Contemporary Race-Ethnic Relations (GT-SS3) Credits: 3 (3-0-0)
Course Description: People of color and white ethnic groups in the U.S. and internationally.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOC 210 Quantitative Sociological Analysis Credits: 3 (3-0-0)
Course Description: Application of quantitative concepts and methodology to investigation of social problems.
Prerequisite: MATH 100 to 199 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 220 Global Environmental Issues (GT-SS3) Credits: 3 (3-0-0)
Course Description: Relationship between human societies around the world and the larger natural environment.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 253 Introduction to Criminal Justice Credits: 3 (3-0-0)
Course Description: Criminal justice as a system. History, philosophy, components and administration of criminal justice.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 275 Introduction to Forensic Anthropology Credits: 3 (3-0-0)
Also Offered As: ANTH 275.
Course Description: Forensic anthropological theory and methods including estimation of age-at-death, sex, stature, ancestry, and trauma analysis.
Prerequisite: None.
Registration Information: Credit not allowed for both ANTH 275 and SOC 275. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 301 Development of Sociological Thought Credits: 3 (3-0-0)
Course Description: Central themes in sociological thought from Enlightenment to present.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 302 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Theoretical approaches and models in sociology.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 311 Methods of Sociological Inquiry Credits: 3 (3-0-0)
Course Description: Application of sociological concepts to sociological problems including problem formulation, data gathering, and research design.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
SOC 313  Computer Methods in Sociology  Credit: 1 (1-0-0)
Course Description: Experimental introduction to typical uses of computers in sociology with emphasis on data analysis.
Prerequisite: SOC 210 or STAT 200 to 499.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 320  Population-Natural Resources and Environment  Credits: 3 (3-0-0)
Course Description: Population studies; world growth patterns and their relationship to natural resources and environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 321  Soil, Environment, and Society  Credits: 3 (3-0-0)
Course Description: Role of soil in our environment and its value as it relates to the social and economic well-being of society.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 322  Introduction to Environmental Justice  Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 323  Sociology of Environmental Governance  Credits: 3 (3-0-0)
Course Description: Roles of government and civil society in creating environmental problems and in developing effective responses to those problems.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Must have minimum of 30 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 324  Food Justice  Credits: 3 (3-0-0)
Course Description: Food justice strives to eliminate exploitation and oppression by challenging the structural drivers within and beyond the food system. As a practice, food justice advocates for the right to healthy food that is justly and sustainably produced, recognizes diverse cultural foodways and histories, and promotes democratic participation and equitable distribution of resources in the food system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 330  Social Stratification  Credits: 3 (3-0-0)
Course Description: Theories of social inequality and mobility and their ramifications in American society.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 332  Comparative Majority-Minority Relations  Credits: 3 (3-0-0)
Course Description: Discrimination, ideology, power, policy issues in the U.S. and selected societies; application of basic concepts in student's self appraisal.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 333  Gender and Society  Credits: 3 (3-0-0)
Course Description: Analysis of social organization of gender in contemporary society, emphasizing gendered experiences and institutional linkages.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 334  Sociology of Intersectionality  Credits: 3 (3-0-0)
Course Description: Multiple and intersecting ways race, class, gender, and sexuality shape society, individual life-chances, and daily social interactions.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 340  Bureaucracy and Modern Organizations  Credits: 3 (3-0-0)
Course Description: Structure and function of large-scale organization; coordination of activities between organizations and society.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 341  Sociology of Rural Life  Credits: 3 (3-0-0)
Course Description: Rural life in U.S. and third world societies; analysis of sociocultural systems, social differentiation, social institutions, and problems of social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 342  Leisure and Society  Credits: 3 (3-0-0)
Course Description: Nature and purpose of leisure and work in society; influences of culture and social structure on leisure values and behavior.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 343  Sport and Society  Credits: 3 (3-0-0)
Course Description: Analysis of sports as social phenomena with a focus on the social implications of sports in everyday life.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 313  Computer Methods in Sociology  Credit: 1 (1-0-0)
Course Description: Experimental introduction to typical uses of computers in sociology with emphasis on data analysis.
Prerequisite: SOC 210 or STAT 200 to 499.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 320  Population-Natural Resources and Environment  Credits: 3 (3-0-0)
Course Description: Population studies; world growth patterns and their relationship to natural resources and environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 321  Soil, Environment, and Society  Credits: 3 (3-0-0)
Course Description: Role of soil in our environment and its value as it relates to the social and economic well-being of society.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 322  Introduction to Environmental Justice  Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 323  Sociology of Environmental Governance  Credits: 3 (3-0-0)
Course Description: Roles of government and civil society in creating environmental problems and in developing effective responses to those problems.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Must have minimum of 30 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 324  Food Justice  Credits: 3 (3-0-0)
Course Description: Food justice strives to eliminate exploitation and oppression by challenging the structural drivers within and beyond the food system. As a practice, food justice advocates for the right to healthy food that is justly and sustainably produced, recognizes diverse cultural foodways and histories, and promotes democratic participation and equitable distribution of resources in the food system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 330  Social Stratification  Credits: 3 (3-0-0)
Course Description: Theories of social inequality and mobility and their ramifications in American society.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 332  Comparative Majority-Minority Relations  Credits: 3 (3-0-0)
Course Description: Discrimination, ideology, power, policy issues in the U.S. and selected societies; application of basic concepts in student's self appraisal.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 333  Gender and Society  Credits: 3 (3-0-0)
Course Description: Analysis of social organization of gender in contemporary society, emphasizing gendered experiences and institutional linkages.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 334  Sociology of Intersectionality  Credits: 3 (3-0-0)
Course Description: Multiple and intersecting ways race, class, gender, and sexuality shape society, individual life-chances, and daily social interactions.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 340  Bureaucracy and Modern Organizations  Credits: 3 (3-0-0)
Course Description: Structure and function of large-scale organization; coordination of activities between organizations and society.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 341  Sociology of Rural Life  Credits: 3 (3-0-0)
Course Description: Rural life in U.S. and third world societies; analysis of sociocultural systems, social differentiation, social institutions, and problems of social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 342  Leisure and Society  Credits: 3 (3-0-0)
Course Description: Nature and purpose of leisure and work in society; influences of culture and social structure on leisure values and behavior.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 343  Sport and Society  Credits: 3 (3-0-0)
Course Description: Analysis of sports as social phenomena with a focus on the social implications of sports in everyday life.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
SOC 344 Health, Medicine, and Society  Credits: 3 (3-0-0)
Course Description: The impact of sociocultural factors like social class, gender, and race/ethnicity on health and illness in society and the social organization of healthcare delivery. The U.S. health care system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 352 Criminology  Credits: 3 (3-0-0)
Course Description: Crime in contemporary society; behavioral, causation, prevention, and justice issues.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 353 Criminal Investigations  Credits: 3 (3-0-0)
Course Description: Examination of the social, organization, and applied facets of the criminal investigation process.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 354 Law Enforcement and Society  Credits: 3 (3-0-0)
Course Description: Rise and development of law enforcement as a societal reaction to crime.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 358 Correctional Organizations  Credits: 3 (3-0-0)
Course Description: Social and organizational issues in the administration of punishment and correction.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 359 Green Criminology  Credits: 3 (3-0-0)
Course Description: Environmental offenses, victims, and responses to environmental crimes and harms.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 360 Political Sociology  Credits: 3 (3-0-0)
Course Description: Analysis of power as a sociological concept, emphasizing competing theories of the state and power.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 362 Social Change  Credits: 3 (3-0-0)
Course Description: Sources of stability and stress in changing societies, consequences of planned and unplanned change; future trends.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 364 Agriculture and Global Society  Credits: 3 (3-0-0)
Course Description: Analysis of relationships between global agriculture and social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 366 Peoples and Institutions of Latin America  Credits: 3 (3-0-0)
Course Description: Change in the cultures and institutions of contemporary Latin America.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 371 Symbolic Interaction  Credits: 3 (3-0-0)
Course Description: Basic concepts and issues in sociological perspective of social action and interactionism.
Prerequisite: SOC 100 or SOC 105.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 372 Sociology of Deviance  Credits: 3 (3-0-0)
Course Description: Descriptions and analyses of the roles and relationships of religion and medicine as modern social institutions.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 403 Capstone Seminar  Credits: 3 (0-0-3)
Course Description: Student demonstration of central concepts and procedures currently employed in sociology discipline.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or CS 110).
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 422 Comparative Legal Systems  Credits: 3 (3-0-0)
Also Offered As: ANTH 422.
Course Description: Traditional approaches to law, competing concepts of law in the global system, and experiences of minorities in state legal systems.
Prerequisite: ANTH 100 or SOC 100.
Registration Information: Credit not allowed for both SOC 422 and ANTH 422.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
SOC 429 Comparative Urban Studies Credits: 3 (3-0-0)
Course Description: World urbanization and metropolitan development, measurement of growth and change in cities, and sociological perspective in planning.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 431 Community Dynamics and Development Credits: 4 (3-2-0)
Course Description: Nature of community; its institutions, problems and processes, including growth, disintegration, and development.
Prerequisite: (SOC 100 or SOC 105) and (SOC 311).
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 444 Federal Indian Law and Policy Credits: 3 (3-0-0)
Also Offered As: ETST 444.
Course Description: Indian policy processes and their impact on Native lives and culture, particularly Native sovereignty.
Prerequisite: None.
Registration Information: Credit not allowed for both SOC 444 and ETST 444.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 450 Gender, Crime, and Criminal Justice Credits: 3 (3-0-0)
Course Description: Issues related to women as offenders, victims, and professionals in the criminal justice system.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 455 Sociology of Law Credits: 3 (3-0-0)
Course Description: Social origins, functions, and procedures of law in society.
Prerequisite: (SOC 100 or SOC 105) and (SOC 253).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 460 Society and Environment Credits: 3 (3-0-0)
Course Description: Technology as a social phenomenon interacting with social organization and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 461 Water, Society, and Environment Credits: 3 (3-0-0)
Course Description: Social aspects of water resource utilization; interface of social organization with physical environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 462 Applied Social Change Credits: 3 (3-0-0)
Course Description: Applied sociology with a focus on research and practice designed to foster social change.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 463 Sociology of Disaster Credits: 3 (3-0-0)
Course Description: Determinants and consequences of behavior and response to environmental extremes including floods, earthquakes, wind, severe storms, and technological emergencies.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 474 Social Movements and Collective Behavior Credits: 3 (3-0-0)
Course Description: Theory and research on causes, organizational structure, and outcomes of social movements and collective behavior.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 482A Travel Abroad: Comparative Criminal Justice Credits: 3 (0-0-3)
Course Description: International and comparative issues in sociology.
Prerequisite: SOC 482B, may be taken concurrently.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 482B Travel Abroad: Crime and Deviance Credits: 3 (0-0-3)
Course Description: International and comparative issues in sociology.
Prerequisite: SOC 482A, may be taken concurrently.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 487 Internship Credits: 3 (0-0-9)
Course Description: Academic-based work experience with selected organizations or agencies. Supervised application of sociological principles and seminar participation.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or CS 110).
Registration Information: Must have concurrent registration in SOC 492.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 489 Seminar Credit: 1 (0-0-1)
Course Description: Examination of work-oriented instruction in seminar setting where sociological principles are analyzed using internship experience.
Prerequisite: (SOC 210 or STAT 200 to 499) and (SOC 301 or SOC 302) and (SOC 311) and (SOC 313 or CS 110).
Registration Information: Must have concurrent registration in SOC 487.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
SOC 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 500 The Sociological Profession I Credit: 1 (1-0-0)
Course Description: Examination of issues and values affecting sociology as a profession.
Prerequisite: SOC 100 to 481 - at least 15 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 501 The Sociological Profession II Credits: 3 (3-0-0)
Course Description: Examination of the activities and procedures critical to the socialization of professional sociologists.
Prerequisite: SOC 100 to 499 - at least 15 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 502 Foundations of Theoretical Sociology Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists prior to mid-20th century.
Prerequisite: SOC 500, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 503 Contemporary Sociological Theory Credits: 3 (3-0-0)
Course Description: Contributions of major sociological theorists since mid-20th century.
Prerequisite: SOC 502.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 510 Sociological Methods I Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 210 or SOC 311.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 511 Sociological Methods II Credits: 3 (3-0-0)
Course Description: Linkage of sociological theory and conceptual models; case studies; data-gathering techniques.
Prerequisite: SOC 510.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 540 Community Sociology Credits: 3 (3-0-0)
Course Description: Intellectual roots of community sociology and contemporary community studies.
Prerequisite: SOC 500.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 555 Society, Deviance, and Crime Credits: 3 (0-0-3)
Course Description: Sociological perspectives and research in the areas of deviance and crime, including classical, positivist, and critical approaches.
Prerequisite: SOC 300 to 499 - at least 12 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 562 Sociology of Food Systems and Agriculture Credits: 3 (2-0-1)
Also Offered As: AGRI 562.
Course Description: How agricultural choices generate intended and unintended consequences for human communities and the natural environment.
Prerequisite: SOC 100 or SOC 105.
Registration Information: Credit not allowed for both SOC 562 and AGRI 562.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 564 Environmental Justice Credits: 3 (3-0-0)
Course Description: Unequal distribution of environmental risks, benefits, policies, and regulatory practices across different populations.
Prerequisite: SOC 100 or SOC 105.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 566 Contemporary Issues of Developing Countries Credits: 3 (3-0-0)
Also Offered As: AREC 566.
Course Description: Social, economic, and technological factors in developing countries.
Prerequisite: None.
Registration Information: Must have taken 2 or more courses in SOC or AREC or ECON. Credit not allowed for both SOC 566 and AREC 566.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 610 Seminar in Methods of Qualitative Analysis Credits: 3 (0-0-3)
Course Description: Examination and application of qualitative techniques of analysis.
Prerequisite: SOC 311, may be taken concurrently or POLS 620, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOC 610 and POLS 621.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 612 Seminar in Methods of Evaluational Research Credits: 3 (0-0-3)
Course Description: Quantitative and qualitative techniques of evaluating social action programs.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOC 613 Seminar in Multiple Regression and Path Analysis Credits: 3 (0-0-3)
Course Description: Analysis and application of techniques for multiple regression and path analysis.
Prerequisite: SOC 511.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 614 Comparative Sociology Credits: 3 (3-0-0)
Course Description: Examination of problems and prospects in extending and carrying out sociological research across social systems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 630 Social Stratification Credits: 3 (3-0-0)
Course Description: Theory and research on class structure, status attainment, ideology, and social change.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 631 Sociology of Rural Development Credits: 3 (3-0-0)
Course Description: Rural social organization and development, modernization, and social change as it relates to rural social systems; underdeveloped regions of world.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 633 Theories of Modern Organizations Credits: 3 (3-0-0)
Course Description: Comparison of various theoretical perspectives on functioning of modern large-scale organizations.
Prerequisite: SOC 340.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 639 Technology Assessment and Social Forecasting Credits: 3 (3-0-0)
Course Description: Interrelationship between technology and society emphasizing procedures for evaluating impacts and forecasting alternatives.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 660 Theories of Development and Social Change Credits: 3 (3-0-0)
Course Description: Central concepts, issues, and approaches in sociology of development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 661 Gender and Global Society Credits: 3 (0-0-3)
Course Description: Gender relations and social change in global society.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 662 Seminar in Sociological Policy Analysis Credits: 3 (0-0-3)
Course Description: Examination of sociological perspectives on formulation and impact of policies to deal with social problems.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 663 Sociology of Sustainable Development Credits: 3 (3-0-0)
Course Description: Social dimensions of sustainable Third World development and implications for policy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 664 Sociology of Water Resources Credits: 3 (3-0-0)
Course Description: Social organization, conflict, and power in arid environments.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 665 Sociology of Science and Technology Credits: 3 (3-0-0)
Course Description: Examination of connections among science, technology, and social development in national and global context.
Prerequisite: SOC 100.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have taken 10 credits of undergraduate natural sciences.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 666 Globalization and Socioeconomic Restructuring Credits: 3 (0-0-3)
Course Description: Sociological theories and issues in globalization; socioeconomic restructuring of the world economy.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOC 667  Theories of State, Economy, and Society  Credits: 3 (3-0-0)
Course Description: Major classical and contemporary sociological theories of state-economy-society relations emphasizing development.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 668 Environmental Sociology  Credits: 3 (3-0-0)
Course Description: Connections between social organizations, the environment, and science and technology.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 669 Global Inequality and Change  Credits: 3 (0-0-3)
Course Description: Major issues in global inequality and change from a historical and contemporary perspective.
Prerequisite: SOC 500.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 671 Metatheoretical Issues in Sociology  Credits: 3 (0-0-3)
Course Description: Analysis of metatheoretical concepts and issues in sociological theory.
Prerequisite: SOC 502.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693A Seminar: Structural Theory  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693B Seminar: Cultural Theory  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693C Seminar: Middle Range Theory  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 693D Seminar: Metatheory  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOC 695 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 696 Group Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 699 Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 752 Seminar in Utopian Thought  Credits: 3 (0-0-3)
Course Description: Sociological analysis of major utopian writings.
Prerequisite: SOC 602.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 784 Supervised College Teaching  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 787 Internship  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 793A Seminar: Quantitative Data Collection  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOC 793B  Seminar: Quantitative Data Analysis  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793C  Seminar: Advanced Ethnographic Methods  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 793D  Seminar: Comparative Methods  Credits: 3 (0-0-3)
Course Description:
Prerequisite: SOC 511.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOC 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOC 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 100  General Crops  Credits: 4 (3-2-0)
Course Description: Production and adaptation of cultivated crops; principles affecting growth, development, management, and utilization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 171  Environmental Issues in Agriculture (GT-SS3)  Credits: 3 (2-0-1)
Also Offered As: HORT 171.
Course Description: Historical development of agriculture; environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 171 and HORT 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOIL + Crop Sciences-SOCR (SOCR)

Courses

SOCR 177  Applied Information Technology in Agriculture  Credit: 1 (1-0-0)
Course Description: Introduction to database and project management, GIS/GPS and remote sensing, as they apply to agriculture, the environment, and business management.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 192  Water in the West  Credits: 3 (0-0-3)
Course Description: History and current status of water resources management and policy in the western United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 200  Seed Anatomy and Identification  Credit: 1 (0-2-0)
Course Description: Principles of seed anatomy including reproduction, identification, and seed characteristics of plant families.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Traditional.
Special Course Fee: No.

SOCR 240  Introductory Soil Science  Credits: 4 (3-2-0)
Course Description: Formation, properties, and management of soils emphasizing soil conditions that affect plant growth.
Prerequisite: CHEM 107 or CHEM 111.

Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.

Grade Mode: Traditional.
Special Course Fee: No.

SOCR 201  Seed Development and Metabolism  Credit: 1 (0-2-0)
Course Description: Basic processes controlling seed development, maturation, dormancy, storage, germination, and how these factors relate to seedling growth.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.

Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.

Grade Mode: Traditional.
Special Course Fee: No.

SOCR 240  Introductory Soil Science  Credits: 4 (3-2-0)
Course Description: Formation, properties, and management of soils emphasizing soil conditions that affect plant growth.
Prerequisite: CHEM 107 or CHEM 111.

Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.

Grade Mode: Traditional.
Special Course Fee: No.

SOCR 300  Seed Purity Analysis  Credits: 2 (0-4-0)
Course Description: Fundamentals for determining physical purity of a seed lot using established rules and procedures.
Prerequisite: SOCR 200.

Registration Information: Written consent of instructor. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.

Grade Mode: Traditional.
Special Course Fee: No.
SOCR 301  Seed Germination and Viability  Credits: 2 (0-4-0)
Course Description: Seed viability tests including standard germination and tetrazolium, seed viability, dormancy, parameters of viability and evaluation.
Prerequisite: SOCR 201.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 310  Agronomic Plant and Seed Identification  Credits: 2 (0-4-0)
Course Description: Evaluate characteristics needed to identify agronomic plant and seed species.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 320  Forage and Pasture Management  Credits: 3 (3-0-0)
Course Description: Fundamentals of establishment, management, and utilization of cultivated forages including hay, silage, and pasture production.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 322  Principles of Microclimatology  Credits: 3 (3-0-0)
Course Description: Principles of microclimatology including energy balance concepts for soil and vegetation surfaces, and their application.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 330  Principles of Genetics  Credits: 3 (3-0-0)
Course Description: Transmission, population, and molecular genetics; practical applications.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 331  Genetics Laboratory  Credit: 1 (0-3-0)
Course Description: Experimental techniques in transmission and molecular genetics.
Prerequisite: SOCR 330, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 341  Microbiology for Sustainable Agriculture  Credit: 1 (1-0-0)
Course Description: Functional roles and management of soil organisms in organic agriculture, emphasis on ecological interactions with plants and plant pathogens.
Prerequisite: SOCR 240.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 342  Organic Soil Fertility  Credit: 1 (1-0-0)
Course Description: Organic soil fertility management in framework of holistic organic farming system.
Prerequisite: SOCR 240 and SOCR 341 and SOCR 350.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 343  Composting Principles and Practices  Credit: 1 (1-0-0)
Course Description: Fundamentals of compost production, use, and regulation.
Prerequisite: SOCR 240 and SOCR 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 344  Crop Development Techniques  Credits: 2 (2-0-0)
Course Description: Conventional and transgenic approaches to crop variety development.
Prerequisite: BZ 120 or LIFE 102 or LIFE 103.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 345  Diagnosis and Treatment in Organic Fields  Credits: 2 (0-4-0)
Also Offered As: HORT 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisite: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 240) and (SOCR 340).
Registration Information: Credit not allowed for both SOCR 345 and HORT 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 350  Soil Fertility Management  Credits: 3 (3-0-0)
Course Description: Managing soil fertility and fertilizers to meet plant nutrient requirements in an environmentally sound manner with emphasis on nutrient cycling.
Prerequisite: (CHEM 107 and CHEM 108 or CHEM 111 and CHEM 112) and (SOCR 240).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 351  Soil Fertility Laboratory  Credit: 1 (0-2-0)
Course Description: Soil chemical analyses and development of fertilizer recommendations for crops.
Prerequisite: SOCR 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 370  Irrigation Principles  Credits: 2 (2-0-0)
Course Description: Determination of irrigation water requirements based on the estimation of storage and movement of water in the soil-plant-atmospheric system.
Prerequisite: (HORT 100 or SOCR 100 or BZ 120) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 371 Irrigation of Field Crops Credit: 1 (1-0-0)
Course Description: Management of irrigation systems for field crops with emphasis on irrigation methods, irrigation scheduling and strategies for water conservation.
Prerequisite: SOCR 370.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 377 Geographic Information Systems in Agriculture Credits: 3 (2-2-0)
Course Description: Introduction to geographic information systems and global positioning systems with applications to agriculture.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Credit not allowed for both SOCR 377 and SOCR 577. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

SOCR 384 Supervised College Teaching Credits: Var[1-5] (0-0-0)
Course Description: Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 400 Soils and Global Change: Science and Impacts Credits: 3 (2-2-0)
Course Description: Foundations on the science of global change and its impact on soil processes and biota.
Prerequisite: (SOCR 240) and (LIFE 220 or LIFE 320).
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 401 Greenhouse Gas Mitigation, Land Use, and Mgmt Credits: 3 (2-3-0)
Course Description: Introduction to greenhouse gas estimation methods and mitigation project development in the land use sector.
Prerequisite: SOCR 240.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 410 Seed Processes: Storage and Deterioration Credit: 1 (0-0-1)
Course Description: Environmental conditions and management factors influencing storage and deterioration of seeds, including physiological and biochemical changes.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 411 Large Seeded Legume Seed Production Credit: 1 (0-0-1)
Course Description: Principles for seed production of large-seeded legume crops with emphasis on common bean, peanut, and soybean.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 412 Seed Processes: Separation and Conditioning Credit: 1 (0-0-1)
Course Description: Understanding the physical process required to separate pure seed from contaminants and maintain viability.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 415 Pollinator Management in Agroecosystems Credit: 1 (1-0-0)
Also Offered As: BSPM 415.
Course Description: Fundamental concepts of pollinator management, sustainable crop-pollinator interactions, global issues on pollinator conservation.
Prerequisite: HORT 100 or SOCR 100.
Registration Information: This is a partial-semester course. Credit not allowed for both SOCR 415 and BSPM 415. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 420 Crop and Soil Management Systems I Credits: 3 (3-0-0)
Course Description: Principles of crop, soil management emphasizing environmental factors influencing crop growth and development, interactions with soil organic matter.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 421 Crop and Soil Management Systems II Credits: 4 (3-2-0)
Course Description: Principles of crop and soil management with emphasis on soil erosion control, water conservation, and plant-water relationships.
Prerequisite: (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 424 Topics in Organic Agriculture Credits: 3 (3-0-0)
Also Offered As: HORT 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisite: (AREC 202 or ECON 202) and (AREC 328 and SOCR 240) and (HORT 100 or SOCR 100) and (SOCR 171 or HORT 171).
Registration Information: Credit not allowed for both SOCR 424 and HORT 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 430 Applications of Plant Biotechnology Credits: 3 (3-0-0)  
Course Description: Current and potential applications of DNA-based biotechnology in crop agriculture and other plant disciplines.  
Prerequisite: SOCR 330.  
Term Offered: Fall (even years).  
Grade Mode: Traditional.  
Special Course Fee: No.

SOCR 440 Pedology Credits: 4 (2-3-1)  
Course Description: Process of soil formation, characterization, classification of soils; soil survey methods.  
Prerequisite: None.  
Registration Information: Must register for lecture, laboratory and recitation.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: Yes.

SOCR 441 Soil Ecology Credits: 3 (2-3-0)  
Course Description: An integrative, hands-on experience in the theory and application of ecology principles to the soil environment.  
Prerequisite: SOCR 455.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

SOCR 442 Forest and Range Soils Credits: 3 (3-0-0)  
Course Description: Soil and water relationships in forest and rangeland ecosystems; significant properties in their management.  
Prerequisite: None.  
Term Offered: Spring.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

SOCR 455 Soil Microbiology Credits: 3 (3-0-0)  
Course Description: Microbial activities in agricultural, forest, and grassland soils; in soil-plant relationships; and in maintenance of environmental quality.  
Prerequisite: MIP 300 or SOCR 240.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

SOCR 456 Soil Microbiology Laboratory Credit: 1 (0-3-0)  
Course Description: Techniques used in study of ecology and activities of soil microorganisms.  
Prerequisite: SOCR 455, may be taken concurrently.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

SOCR 460 Plant Breeding Credits: 3 (2-0-1)  
Also Offered As: HORT 460.  
Course Description: Theory and practice of plant breeding using principles of genetics and related sciences.  
Prerequisite: BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.  
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 460 and HORT 460.  
Term Offered: Fall (odd years).  
Grade Mode: Traditional.  
Special Course Fee: No.

SOCR 461 Plant Breeding Laboratory Credit: 1 (0-2-0)  
Also Offered As: HORT 461.  
Course Description: Techniques and procedures used in public and commercial plant breeding programs.  
Prerequisite: SOCR 460, may be taken concurrently or HORT 460, may be taken concurrently.  
Registration Information: Credit not allowed for both SOCR 461 and HORT 461.  
Term Offered: Fall (odd years).  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

SOCR 467 Soil and Environmental Chemistry Credits: 3 (3-0-0)  
Course Description: Fundamental principles of soil chemistry with respect to environmental reactions between soils and other natural materials and priority pollutants.  
Prerequisite: CHEM 335.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

SOCR 470 Soil Physics Credits: 3 (3-0-0)  
Course Description: Physical properties of soils emphasizing mechanical composition, moisture, aeration, temperature, and structure related to management, plant growth.  
Prerequisite: SOCR 240 or GEOL 232.  
Term Offered: Fall.  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

SOCR 471 Global Challenges in Plant and Soil Science Credits: 3 (3-0-0)  
Course Description: Evaluation of case studies to define problems and develop solutions to address global challenges in plant and soil science.  
Prerequisite: (SOCR 240 or GEOL 122) and (LIFE 102 or BZ 120).  
Term Offered: Spring (even years).  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

SOCR 475 Soil Physics Laboratory Credit: 1 (0-3-0)  
Course Description: Familiarization of techniques and equipment used in evaluation of soil physical properties.  
Prerequisite: SOCR 470, may be taken concurrently.  
Term Offered: Fall.  
Grade Mode: S/U Sat/Unsat Only.  
Special Course Fee: No.

SOCR 478 Environmental Soil Sciences Credits: 3 (3-0-0)  
Course Description: Chemical, biological, and physical aspects of prevention and remediation of soil and water pollution; environmental impact assessment.  
Prerequisite: SOCR 470 and SOCR 467, may be taken concurrently.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

SOCR 479 Environmental Soil Science Laboratory Credit: 1 (0-3-0)  
Course Description: Laboratory and field studies of soil and groundwater contamination, including monitoring and remediation.  
Prerequisite: SOCR 478, may be taken concurrently.  
Registration Information: Required field trips.  
Term Offered: Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.
SOCR 486 Practicum Credits: Var[1-4] (0-0-0)
Course Description: Directed experiences in the application of soil and crop science principles.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 487 Internship Credits: Var[1-12] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 488 Hydrus-1D Workshop Credit: 1 (0-0-1)
Course Description: Using Hydrus-1D software for flow and transport of water, heat, and chemicals in soil.
Prerequisite: SOCR 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 490 Seminar Credit: 1 (0-0-1)
Course Description: None.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 495 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 496 Group Study Credits: Var[1-18] (0-0-0)
Course Description: None.
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 498 Undergraduate Research Credits: Var[1-6] (0-0-0)
Course Description: Research in soil and crop sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 500 Environmental Measurement Laboratory Credit: 1 (0-2-0)
Course Description: A hands-on instrumentation lab for making environmental, weather, and soil measurements using low-cost microcontroller boards and sensors.
Prerequisite: PH 110.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 514 Agricultural Experimental Design and Analysis Credits: 4 (3-3-0)
Also Offered As: STAT 514.
Course Description: Design and implementation of agricultural experiments and statistical analysis of resulting data.
Prerequisite: STAT 201 or STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: SOCR 414, SOCR 514, STAT 302, or STAT 514.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 522 Micrometeorology Credits: 3 (3-0-0)
Course Description: Microenvironments; physics of environmental variables; plant canopy microclimate; evapotranspiration; surface-atmosphere exchange; instrumentation.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 530 Scientific Writing Credit: 1 (1-0-0)
Also Offered As: BSPM 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both SOCR 530 and BSPM 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 535 Origin and Evolution of Cultivated Plants Credits: 3 (3-0-0)
Course Description: Origin of crops from viewpoints of archaeology, history, botany, and taxonomy, and continued evolution of plants under cultivation.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 540 Soil-Plant-Nutrient Relationships Credits: 3 (3-0-0)
Course Description: Soil and plant factors affecting nutrient uptake, mechanistic models of uptake, availability and functions of essential elements, diagnostic techniques.
Prerequisite: SOCR 350.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 550 Advanced Soil Genesis Credits: 3 (3-0-0)
Course Description: Modern concepts of specific mechanisms involved in formation of genetic soil groups and their relationship to environmental factors.
Prerequisite: SOCR 440.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
SOCR 567 Environmental Soil Chemistry Credits: 4 (3-0-1)
Course Description: The chemistry of terrestrial environments and the interactions of soil constituents with bacteria, nutrients, and pollutants.
Prerequisite: CHEM 335.
Registration Information: Credit not allowed for SOCR 467 and SOCR 567.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 570 Plant Breeding for Drought Tolerance Credit: 1 (1-0-0)
Course Description: Principles and practices of evaluation, selection and cultivar development for crops in drought-stress environments with an emphasis on agronomic crops.
Prerequisite: SOCR 330 and SOCR 460.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 571 Foundations of Soil Science Credits: 2 (2-0-0)
Course Description: Importance of soils in ecology and earth system science with regard to the study and management of the soil resource.
Prerequisite: SOCR 240.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 577 Principles/Components: Precision Agriculture Credits: 3 (2-2-0)
Course Description: Principles and components of precision agriculture, including GPS, GIS, remote sensing, and their applications in soil and crop management.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SOCR 577 and SOCR 377. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 620 Modeling Ecosystem Biogeochemistry Credits: 3 (2-3-0)
Course Description: Design and build biogeochemical process and ecosystem models with GUI-based software. Analyze and test models and interpret experimental data.
Prerequisite: (ECOL 505 or LAND 220 or LIFE 220 or SOCR 240) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 640 Crop Physiology Credit: 1 (1-0-0)
Course Description: Developmental, physiological, and biochemical determinants of crop yields as controlled by genetic and environmental effects.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 650 Research Proposal Development Credit: 1 (1-0-0)
Course Description: Skills to develop and write an effective scientific research proposal.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 670 Terrestrial Ecosystems Isotope Ecology Credits: 3 (2-2-0)
Course Description: Isotope distribution in biogeochemical cycles, research topics in biosphere-atmosphere interactions; lab experience with isotope techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 675 Presentations for Scientific Audiences Credit: 1 (1-0-0)
Course Description: Organization and presentation of scientific information to audiences in oral and poster format.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: Skills to develop and write an effective scientific research proposal.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 720 Advanced Plant Breeding Credits: 4 (4-0-0)
Course Description: Systems of mating and selection in plants to maximize genetic gain. Evaluation of heterosis, germplasm diversity, strategies, and new technologies.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 499 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 720A Advanced Plant Breeding: Methods Credits: 2 (2-0-0)
Course Description: Historical perspectives in plant breeding, plant reproduction, genetic gain, breeding and selection systems in self- and cross-pollinated plants.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 720B Advanced Plant Breeding: Tools Credits: 2 (2-0-0)
Course Description: Plant breeding strategies, genotype x environment interaction, field plot and genomic tools, breeding for pest resistance, stress tolerance, quality.
Prerequisite: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 725 Quantitative Inheritance in Plant Breeding Credits: 3 (2-2-0)
Course Description: Quantitative genetic structure of populations, recognition of genetic, environmental variance. Methods of dealing with quantitatively inherited traits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 730 Topics in Plant Breeding and Genetics Credit: 1 (1-0-0)
Course Description: Current literature regarding mechanisms used for plant improvement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 731 Plant Breeding Data Management Credit: 1 (1-0-0)
Course Description: Principles and best practices for optimal data management for plant breeding and other data-intensive research programs.
Prerequisite: None.
Registration Information: Must have taken three credits in computer science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: BSPM 740.
Course Description: Advances in study of organization and function of nuclear and organelar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOCR 740 and BSPM 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 755 Advanced Soil Microbiology Credits: 3 (3-0-0)
Course Description: Ecology of soil microorganisms emphasizing population and activity relationships, nitrogen fixation, and microbe-pesticide interactions.
Prerequisite: MIP 624 or SOCR 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 760 Advanced Soil Chemistry Credits: 3 (3-0-0)
Course Description: Surface chemistry of soils, electrical double layer models of surface charge and potential, colloid stability, computer modeling of adsorption.
Prerequisite: (CHEM 100 to 481 - at least 4 courses and CS 100 to 481 - at least 1 course) and (MATH 141 or MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 770 Advanced Soil Physics Credits: 4 (3-2-0)
Course Description: Description and analysis of principles of storage and movement of water, solutes, heat, and gases in soils.
Prerequisite: MATH 261 or SOCR 470.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 792 Seminar Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 796 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
Courses

STAT 158 Introduction to R Programming Credit: 1 (1-0-0)
Course Description: Programming using the R Project for the Statistical Computing. Data objects, for loops, if statements, using packages.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 192 First-Year Seminar in Statistics Credit: 1 (0-0-1)
Course Description: Explore careers in statistics and the variety of problems encountered by statisticians.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 201 General Statistics Credits: 3 (2-0-1)
Course Description: Graphs, descriptive statistics, confidence intervals, hypothesis tests, correlation and simple regression, tests of association.
Prerequisite: MATH 1**** to 200 - at least 1 credit or MATH 1** to 200 - at least 1 credit or M 1**** to 200 - at least 1 credit or M 1** to 200 - at least 1 credit or M CC 1** to 200 - at least 1 credit or M CC 1**** to 200 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework. Intended as a one-semester terminal course. Must register for lecture and recitation. Credit not allowed for both STAT 201 and STAT 204.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 204 Statistics for Business Students Credits: 3 (2-2-0)
Course Description: Surveys, sampling, descriptive statistics, confidence intervals, contingency tables, control charts, regression, exponential smoothing, forecasting.
Prerequisite: MATH 1**** to 200 - at least 1 credit or MATH 1** to 200 - at least 1 credit or M 1**** to 200 - at least 1 credit or M 1** to 200 - at least 1 credit or M CC 1** to 200 - at least 1 credit or M CC 1**** to 200 - at least 1 credit.
Registration Information: Mathematics placement exam can substitute for coursework. Must register for lecture and laboratory. Credit not allowed for both STAT 204 and STAT 201.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 203 Introduction to Communications Principles Credits: 3 (3-0-0)
Also Offered As: ECE 303.
Course Description: Basic concepts in design and analysis of communication systems.
Prerequisite: MATH 340, may be taken concurrently or MATH 345, may be taken concurrently.
Registration Information: Credit not allowed for both ECE 303 and STAT 303.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 305 Sampling Techniques Credits: 3 (3-0-0)
Course Description: Sample designs: simple random, stratified, systematic, cluster, unequal probability, two-phase; methods of estimation and sample size determination.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 307 Introduction to Biostatistics Credits: 3 (3-0-0)
Course Description: Biostatistical methods; confidence intervals, hypothesis tests, simple correlation and regression, one-way analysis of variance.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one of the following: STAT 301, STAT 307/ERHS 307, STAT 311, or STAT 315.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 308 Introduction to Statistical Methods Credits: 3 (3-0-0)
Course Description: Techniques in statistical inference; confidence intervals, hypothesis tests, correlation and regression, analysis of variance, chi-square tests.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one course: STAT 301, STAT 307/ERHS 307, STAT 311, STAT 315.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option, Traditional.
Special Course Fee: No.

STAT 309 Introduction to Statistical Methods Credits: 3 (3-0-0)
Course Description: Techniques in statistical inference; confidence intervals, hypothesis tests, correlation and regression, analysis of variance, chi-square tests.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one course: STAT 301, STAT 307/ERHS 307, STAT 311, STAT 315.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option, Traditional.
Special Course Fee: No.

STAT 310 Introduction to Statistical Methods Credits: 3 (3-0-0)
Course Description: Techniques in statistical inference; confidence intervals, hypothesis tests, correlation and regression, analysis of variance, chi-square tests.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one course: STAT 301, STAT 307/ERHS 307, STAT 311, STAT 315.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option, Traditional.
Special Course Fee: No.

STAT 311 Statistics for Behavioral Sciences I Credits: 3 (3-0-0)
Course Description: Statistical literacy, quantitative reasoning, statistical methods in SPSS including ANOVA, regression, logistic regression, and categorical data.
Prerequisite: MATH 117 or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160.
Registration Information: Credit allowed for only one of the following: ERHS 307, STAT 301, STAT 307, or STAT 311.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 312 Statistics for Behavioral Sciences II Credits: 3 (3-0-0)
Course Description: One-way analysis of variance, factorial designs, blocked designs, multiple comparisons of means, and multiple regression.
Prerequisite: STAT 311.
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
STAT 315 Statistics for Engineers and Scientists Credits: 3 (3-0-0)
Course Description: Calculus-based probability and statistics: distribution theory, estimation, hypothesis testing, applications to engineering and the sciences.
Prerequisite: MATH 155 or MATH 160.
Registration Information: Credit allowed for only one course: ERHS 307, STAT 301, STAT 307, STAT 315.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 316 Games and Gambling Credit: 1 (1-0-0)
Course Description: Application of probability concepts to games of chance and gambling contests.
Prerequisite: STAT 315.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 321 Elementary Probabilistic-Stochastic Modeling Credits: 3 (3-0-0)
Course Description: Probabilistic and stochastic models of real phenomena; distributions, expectations, correlations, averages; simple Markov chains and random walks.
Prerequisite: (CS 156 or CS 160 or MATH 151 or MATH 152) and (MATH 155 or MATH 160).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 340 Multiple Regression Analysis Credits: 3 (3-0-0)
Course Description: Estimation and testing for linear, polynomial, and multiple regression models; analysis of residuals; selection of variables; nonlinear regression.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 341 Statistical Data Analysis I Credits: 3 (3-0-0)
Course Description: Estimation and inference based upon Gaussian linear regression models; residual analysis; variable selection; non-linear regression.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 342 Statistical Data Analysis II Credits: 3 (3-0-0)
Course Description: Single-factor analysis of variance models; multi-factor analysis of variance models; randomized block design; Latin squares; split-plot design.
Prerequisite: STAT 340 or STAT 341.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 350 Design of Experiments Credits: 3 (3-0-0)
Course Description: Analysis of variance, covariance; randomization; completely randomized, randomized block, Latin-square, split-plot, factorial and other designs.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 358 Introduction to Statistical Computing in SAS Credits: 2 (2-0-0)
Course Description: Statistical procedures and database operations using the SAS programming language.
Prerequisite: STAT 315 or STAT 341.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 372 Data Analysis Tools Credits: 3 (3-0-0)
Course Description: Data analysis principles and practice, statistical packages and computing; ANOVA, regression and categorical data methods.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 400 Statistical Computing Credits: 3 (3-0-0)
Course Description: Computationally intensive statistical methods: optimization for statistical problems; simulation & Monte Carlo methods; resampling methods; smoothing.
Prerequisite: (CS 160 or CS 164 or MATH 151 and MATH 153) and (STAT 420, may be taken concurrently).
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 420 Probability and Mathematical Statistics I Credits: 3 (3-0-0)
Course Description: Probability, random variables, distribution functions, and expectations; joint and conditional distributions and expectations; transformations.
Prerequisite: MATH 255 or MATH 261.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 421 Introduction to Stochastic Processes Credits: 3 (3-0-0)
Course Description: Modeling phenomena with stochastic processes and the simulation and analysis of stochastic process models.
Prerequisite: (MATH 229 or MATH 369) and (STAT 420).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 430 Probability and Mathematical Statistics II Credits: 3 (3-0-0)
Course Description: Theories and applications of estimation, testing, and confidence intervals, sampling distributions including normal, gamma, beta X-squared, t, and F.
Prerequisite: STAT 420.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
STAT 440 Bayesian Data Analysis  Credits: 3 (3-0-0)
Course Description: Applied Bayesian data analysis, Bayesian inference and interpretation of results, computing methods including MCMC, model selection and evaluation.
Prerequisite: (STAT 315 or STAT 430) and (STAT 342).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 460 Applied Multivariate Analysis  Credits: 3 (3-0-0)
Course Description: Principles for multivariate estimation and testing; multivariate analysis of variance, discriminant analysis; principal components, factor analysis.
Prerequisite: STAT 340 or STAT 341.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 472 Statistical Consulting  Credits: 3 (0-0-3)
Course Description: Statistical consulting skills including data analysis, problem solving, report writing, oral communication, and planning experiments.
Prerequisite: STAT 342 or STAT 372.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 495 Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 498 Undergraduate Research in Statistics  Credits: Var[1-3] (0-0-0)
Course Description: Research skills and techniques; includes both oral and written communication of results.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 500 Statistical Computer Packages  Credit: 1 (0-2-0)
Course Description: Comparison, evaluation, and use of computer packages for univariate and multivariate statistical analyses.
Prerequisite: STAT 340 and STAT 350.
Registration Information: Admission to the Master of Applied Statistics program can substitute for STAT 350. Sections may be offered: Online.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 501 Statistical Science  Credit: 1 (1-0-0)
Course Description: Overview of statistics theory; use in agriculture, business, environment, engineering; modeling; computing; statisticians as researchers/consultants.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 511 Design and Data Analysis for Researchers I  Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters and researchers emphasizing design and analysis of experiments.
Prerequisite: STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 511A Design and Data Analysis for Researchers I: R Software  Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using R software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 511B Design and Data Analysis for Researchers I: SAS Software  Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters/researchers emphasizing design and analysis of experiments using SAS software.
Prerequisite: STAT 301 or STAT 307 or STAT 311 or STAT 315.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 512 Design and Data Analysis for Researchers II  Credits: 4 (3-0-1)
Course Description: Statistical methods for experimenters and researchers emphasizing design and analysis of experiments.
Prerequisite: STAT 511A or STAT 511B.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 514 Agricultural Experimental Design and Analysis  Credits: 4 (3-3-0)
Also Offered As: SOCR 514.
Course Description: Design and implementation of agricultural experiments and statistical analysis of resulting data.
Prerequisite: STAT 201 or STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: STAT 302, STAT 514, SOCR 414, or SOCR 514.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 515 Statistical Science and Process Improvement  Credits: 3 (2-2-0)
Course Description: Statistical methods in process design; statistical methods; measurement processes; customer evaluation.
Prerequisite: QNT 570 or STAT 511 or STAT 540.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
STAT 520 Introduction to Probability Theory Credits: 4 (4-0-0)
Course Description: Probability, random variables, distributions, expectations, generating functions, limit theorems, convergence, random processes.
Prerequisite: MATH 369 and MATH 261 and MATH 317.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 521 Stochastic Processes I Credits: 3 (3-0-0)
Course Description: Characterization of stochastic processes. Markov chains in discrete and continuous time, branching processes, renewal theory, Brownian motion.
Prerequisite: STAT 520.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 522 Stochastic Processes II Credits: 3 (3-0-0)
Course Description: Martingales and applications, random walks, fluctuation theory, diffusion processes, point processes, queueing theory.
Prerequisite: STAT 521.
Terms Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 523 Quantitative Spatial Analysis Credits: 3 (3-0-0)
Also Offered As: NR 523.
Course Description: Techniques in spatial analysis: point pattern analysis, spatial autocorrelation, trend surface and spectral analysis.
Prerequisite: ERHS 307 or STAT 301 or STAT 307.
Registration Information: Credit not allowed for both STAT 523 and NR 523.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 524 Financial Statistics Credits: 3 (3-0-0)
Also Offered As: FIN 524.
Course Description: Probability and statistical concepts and quantitative tools used in financial modeling and decision-making.
Prerequisite: MATH 345 and STAT 420.
Registration Information: Admission to MSBA program with Financial Risk Management specialization can substitute for MATH 345. Credit not allowed for both STAT 524 and FIN 524. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 525 Analysis of Time Series I Credits: 3 (3-0-0)
Course Description: Trend and seasonality, stationary processes, Hilbert space techniques, spectral distribution function, fitting ARIMA models, linear prediction.
Prerequisite: STAT 430.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 526 Analysis of Time Series II Credits: 3 (3-0-0)
Course Description: Spectral analysis; the periodogram; spectral estimation techniques; multivariate time series; linear systems, optimal control; Kalman filtering, prediction.
Prerequisite: STAT 525.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 527 Mathematical Statistics Credits: 3 (3-0-0)
Course Description: Sampling distributions, estimates, testing, confidence intervals, exact and asymptotic theories of maximum likelihood and distribution-free methods.
Prerequisite: STAT 520.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 528 Data Analysis and Regression Credits: 3 (3-0-0)
Course Description: Introduction to multiple regression and data analysis with emphasis on graphics and computing.
Prerequisite: STAT 300 to 481 - at least 6 credits.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 529 Biostatistical Methods for Quantitative Data Credits: 3 (3-0-0)
Also Offered As: ERHS 544.
Course Description: Regression and analysis of variance methods applied to both observational studies and designed experiments in the biological sciences.
Prerequisite: STAT 301 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both STAT 544 and ERHS 544.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 530 Statistics for Environmental Monitoring Credits: 3 (3-0-0)
Also Offered As: CIVE 547.
Course Description: Applications of statistics in environmental pollution studies involving air, water, or soil monitoring; sampling designs; trend analysis; censored data.
Prerequisite: STAT 301.
Registration Information: Credit not allowed for both STAT 547 and CIVE 547.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 531 Bioinformatics Algorithms Credits: 3 (3-2-0)
Also Offered As: CS 548.
Course Description: Computational methods for analysis of DNA/protein sequences and other biological data.
Prerequisite: STAT 301 or STAT 307 or STAT 315.
Registration Information: Student should have preexisting knowledge of a contemporary programming language. Credit not allowed for both STAT 548 and CS 548.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
STAT 560  Applied Multivariate Analysis  Credits: 3 (3-0-0)
Course Description: Multivariate analysis of variance; principal components; factor analysis; discriminant analysis; cluster analysis.
Prerequisite: STAT 520 and STAT 540.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 570  Nonparametric Statistics  Credits: 3 (3-0-0)
Course Description: Distribution and uses of order statistics; nonparametric inferential techniques, their uses and mathematical properties.
Prerequisite: STAT 430.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 600  Statistical Computing  Credits: 3 (3-0-0)
Course Description: Optimization and integration in statistics; Monte Carlo methods; simulation; bootstrapping; density estimation; smoothing.
Prerequisite: STAT 520 and STAT 540.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 604  Managerial Statistics  Credits: 2 (2-0-0)
Also Offered As: BUS 604.
Course Description: Introduction to statistical thinking and methods used to support managerial decision making.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the MBA program. Credit not allowed for both STAT 604 and BUS 604.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 605  Theory of Sampling Techniques  Credits: 3 (3-0-0)
Course Description: Survey designs; simple random, stratified, cluster samples; theory of estimation; optimization techniques for minimum variance or costs.
Prerequisite: (STAT 301 or STAT 307 or ERHS 307 or STAT 311 or STAT 315) and (STAT 430).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 620  Introduction to Measure Theoretic Probability  Credits: 3 (3-0-0)
Course Description: Introduction to rigorous probability theory in real Euclidean spaces based on a foundation of measure theory.
Prerequisite: STAT 520.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 623  Spatial Statistics  Credits: 3 (3-0-0)
Course Description: Spatial autocorrelation, geostatistical models and kriging, analysis/modeling of point patterns, discretely-indexed spatial models.
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 640  Design and Linear Modeling I  Credits: 4 (4-0-0)
Course Description: Introduction to linear models; experimental design; fixed, random, and mixed models.
Prerequisite: MATH 369 and STAT 540.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 650  Design and Linear Modeling II  Credits: 3 (3-0-0)
Course Description: Taguchi methods; variance components.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 645  Categorical Data Analysis and GLIM  Credits: 3 (3-0-0)
Course Description: Generalized linear models, binary and polytomous data, log linear models, quasilikelihood, survival data models.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 640.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 660  Hierarchical Modeling in Ecology  Credits: 3 (3-0-0)
Course Description: Mixed factorials; response surface methodology; Taguchi methods; variance components.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 673  Hierarchical Modeling in Ecology  Credits: 3 (3-0-0)
Course Description: Hierarchical ecological modeling using common forms of data in fish and wildlife studies and emphasizing spatial and temporal aspects of analysis.
Prerequisite: ESS 575 or STAT 420.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both STAT 673 and FW 673.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
STAT 675A  Topics in Statistical Methods: Sampling  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675B  Topics in Statistical Methods: Design  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675C  Topics in Statistical Methods: Multivariate and Regression Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675D  Topics in Statistical Methods: Computer Intensive Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675F  Topics in Statistical Methods: Robustness and Nonparametric Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675I  Topics in Statistical Methods: Industrial Statistical Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675J  Topics in Statistical Methods: Reliability  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675K  Topics in Statistical Methods: Bayesian Statistics  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 675L  Topics in Statistical Methods: Medical/Pharmaceutical Statistical Methods  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: STAT 430.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 684  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Guidance and instruction in effective teaching of college courses in statistics.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrollment in M.S. or Ph.D. program in statistics.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

STAT 695  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 720  Probability Theory  Credits: 3 (3-0-0)
Course Description: Measure theoretic probability, characteristic functions; convergence; laws of large numbers; central limit, extreme value, asymptotic theory.
Prerequisite: STAT 620.
Restriction: Must be a: Graduate, Professional.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 721  Applied Probability and Stochastic Processes I  Credits: 3 (3-0-0)
Course Description: General theory of processes; Markov processes in discrete, continuous time; review of martingales, random walks; renewal and regenerative processes.
Prerequisite: STAT 720.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
STAT 722  Applied Probability and Stochastic Processes II  Credits: 3 (3-0-0)
Course Description: Brownian motion, diffusion, stochastic differential equations; weak convergence, central limit theorems. Applications in engineering, natural sciences.
Prerequisite: STAT 720.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 725  Time Series and Stationary Processes  Credits: 3 (3-0-0)
Course Description: Spectral theory of multivariate stationary processes; estimation, testing for spectral, linear, AR-MA representations; best linear predictors, filters.
Prerequisite: STAT 720 and STAT 730.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 730  Advanced Theory of Statistics I  Credits: 4 (4-0-0)
Course Description: Minimal sufficiency, maximal invariance; Neyman-Pearson theory, Fisher, Kullback-Leibler information; asymptotic properties of maximum-likelihood methods.
Prerequisite: STAT 530 and STAT 720.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 731  Advanced Theory of Statistics II  Credits: 3 (3-0-0)
Course Description: Decision-theory model, Bayes, E-Bayes, complete, and admissible classes; applications to sequential analysis and design of experiments.
Prerequisite: STAT 730.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 740  Advanced Statistical Methods  Credits: 3 (3-0-0)
Course Description: Generalized additive models; recursive partitioning regression and classification; graphical models and belief networks; spatial statistics.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 750  Advanced Theory of Design  Credits: 3 (3-0-0)
Course Description: Information theory, design evaluation, factorial designs and optimal designs, orthogonal and balanced arrays, designs with discrete/continuous factors.
Prerequisite: STAT 650.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 760  Theory of Multivariate Statistics  Credits: 3 (3-0-0)
Course Description: Theory of multivariate normal; maximum-likelihood inference, union-intersection testing for single sample; theory of a multivariate linear model.
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730.
Terms Offered: Fall, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

STAT 770  Approximation Theory and Methods  Credits: 3 (3-0-0)
Course Description: Edgeworth expansions, saddlepoint methods; applications of weak convergence and other approximation methods in mathematical statistics.
Prerequisite: STAT 730.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 792  Seminar  Credit: 1 (0-0-1)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 793  Seminar on Advanced Statistical Methods  Credits: 3 (0-0-3)
Course Description:
Prerequisite: STAT 640.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in STAT 730. May be taken up to two times for credit.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

STAT 795  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 796  Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

STAT 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Study Abroad-SA (SA)
Courses

SA 482 Study Abroad Credits: Var[1-18] (0-0-0)
Course Description: Students participating in a semester study abroad program register for SA 482.
Prerequisite: None.
Registration Information: This is not a course for credit.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E.

SA 682 Graduate Study Abroad Credits: Var[1-18] (0-0-0)
Course Description: Vehicle to allow graduate students to enroll in a study program abroad as part of their approved program.
Prerequisite: None.
Restriction: Must be a Graduate, Professional.
Registration Information: This is not a course for credit. Approval of graduate committee, Graduate School, and International Programs.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

Theatre-TH (TH)

Courses

TH 141 Introduction to Theatre (GT-AH1) Credits: 3 (3-0-0)
Course Description: Theatre as an art and one of the humanities, its impact upon society, and its relationship to other art forms.
Prerequisite: None.
Registration Information: Required field trips. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
Additional Information: Arts & Humanities 3B, Arts & Expression (GT-AH1).

TH 149 Movement for Actors I Credits: 2 (0-4-0)
Course Description: A broad survey of different movement theories from Asia, Africa, and Europe.
Prerequisite: TH 141 and TH 150, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 150 Introduction to Performance Credits: 3 (1-0-2)
Course Description: Imagination as the actor's primary resource: acting exercises, compositions, improvisations to acquire the basic approach to text through action.
Prerequisite: None.
Registration Information: Must register for lecture and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 151 Acting I Credits: 3 (2-2-0)
Course Description: Imagination as an actor's resource. Finding action, objective, the art of memory, improvisation, scene study, from simple scenes in realistic plays.
Prerequisite: TH 150.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 152 Study Abroad Credits: Var[1-18] (0-0-0)
Course Description: Students participating in a semester study abroad program register for TH 152.
Prerequisite: None.
Registration Information: This is not a course for credit.
Terms Offered: Fall, Spring, Summer.
Special Course Fee: No.

TH 153 Singing for Actors I Credits: 2 (0-0-2)
Course Description: Fusion of acting technique and singing technique for credible performance in the musical genre.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 160 Drawing for the Theatre Credits: 3 (1-4-0)
Course Description: Introduction to drawing, drafting, watercolor, and other graphic techniques used by set, costume, lighting, and media designers.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 161 Technical Theatre: Stagecraft Credits: 3 (2-2-0)
Course Description: Skills and craft of technical theatre. Knowledge of tools, materials, and techniques essential to production realization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 163 Costume Construction for the Theatre Credits: 3 (1-4-0)
Course Description: Technical side of costuming for live stage performances with an emphasis on all aspects of construction.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 175 Storytelling Credits: 3 (2-0-2)
Course Description: Study and practice of storytelling.
Prerequisite: TH 141, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 186 Theatre Practicum I Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: None.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

TH 192 Theatre Freshman Seminar Credits: 3 (0-0-3)
Course Description: Collaborative creative processes required to transfer storytelling and self-scripting literature to theatrical performance with faculty artists/scholars.
Prerequisite: None.
Registration Information: Theatre majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
TH 240  Reading Shakespeare for the Theatre  Credits: 3 (3-0-0)
Course Description: Reading, speaking Shakespeare texts: comedies, sonnets, romances, to develop various approaches to understand and perform his work to modern audiences.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 241  Text Analysis for the Theatre  Credits: 3 (3-0-0)
Course Description: Analyzing plays with an aim toward being better prepared, as theatre artists, to understand the dramatic text, the basis of theatre art and craft.
Prerequisite: TH 150 or TH 160.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 242  Theatre History I  Credits: 3 (3-0-0)
Course Description: Theatre from its origins through the Renaissance.
Prerequisite: TH 241, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 243  Theatre History II  Credits: 3 (3-0-0)
Course Description: Theatre history from the English Restoration of 1660 through the postwar developments in Europe and the Americas from 1945 to 1960.
Prerequisite: TH 242.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 246  Movement for Actors II  Credits: 2 (0-4-0)
Course Description: Intermediate actor movement.
Prerequisite: TH 149 and TH 251, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 249  Movement for Actors II  Credits: 2 (0-4-0)
Course Description: Intermediate actor movement.
Prerequisite: TH 149 and TH 251, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 250  Voice and Movement for the Stage  Credits: 3 (2-2-0)
Course Description: A broad survey of traditional and topical approaches to voice and movement for the theatre actor.
Prerequisite: TH 251, may be taken concurrently.
Restriction: 
Registration Information: Theatre Majors only. Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 251  Acting II  Credits: 3 (2-2-0)
Course Description: Application of the given circumstances to a text and development of characterization. Selection and preparation of audition material.
Prerequisite: TH 151.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 253  Singing for Actors II  Credits: 2 (0-0-2)
Course Description: Advanced singing techniques, sight singing, using more difficult and challenging music. Preparing for a performance in musical theatre.
Prerequisite: TH 153.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 255  Directing Workshop  Credits: 3 (2-2-0)
Course Description: Practical directing workshop, short directing exercises, short scenes, techniques, theories, readings, staging prompts.
Prerequisite: TH 151, may be taken concurrently and TH 241, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 260  Computer Assisted Drafting for Theatre  Credits: 3 (2-2-0)
Course Description: Computer-aided drafting and conceptual articulation for theatrical design and production using entertainment industry standard: Vectorworks.
Prerequisite: TH 161 and TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 261  Drawing and Drafting for the Theatre  Credits: 3 (1-4-0)
Course Description: Fundamental drawing, drafting, and rendering techniques needed by theatrical designers to effectively communicate their visual ideas.
Prerequisite: TH 160.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 262  Stage Management I  Credits: 3 (3-0-0)
Course Description: Duties and responsibilities of stage managers. Communication, rehearsal, performance techniques. Conceptual approaches to theatre.
Prerequisite: TH 150, may be taken concurrently and TH 160, may be taken concurrently and TH 175, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
TH 263 Costume Design I Credits: 3 (1-4-0)
Course Description: Basic theory and technique for visualization of theatrical characters through costume.
Prerequisite: TH 163.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 264 Lighting Design for the Theatre I Credits: 3 (2-2-0)
Course Description: Essential principles and theory for stage lighting including design process, control, equipment, and lighting aesthetics.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 265 Set Design I Credits: 3 (3-0-0)
Course Description: Theory and techniques for designing scenery for the stage.
Prerequisite: TH 160 and TH 161.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 266 Digital Media Design for Live Performance I Credits: 3 (2-2-0)
Course Description: Sound and projection design fundamentals: control, design and content creation for live performance settings.
Prerequisite: TH 160 and TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 267 Scenic Painting Credits: 3 (1-6-0)
Course Description: Basic techniques and practical applications in scenic painting for the theatre.
Prerequisite: TH 265, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 269 Theatrical Makeup Credits: 3 (2-3-0)
Course Description: Stage makeup. Individual skill in character analysis, application in pigment, plastic, hair, makeup, and selection and use of theatrical makeup.
Prerequisite: TH 160 or TH 263.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 275 Self-Scripting and Performance Workshop Credits: 3 (1-0-2)
Course Description: Study and practice of the processes of self-scripting (theatrical storytelling from personal experience) as a tool for performers and writers.
Prerequisite: TH 175.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 286 Theatre Practicum II Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 186.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 292 Design and Technology Seminar Credit: 1 (0-0-1)
Course Description: Weekly examination of the ongoing production processes and strategies for stage managers and designers assigned productions in the mainstage season.
Prerequisite: TH 141, may be taken concurrently or TH 160, may be taken concurrently.
Registration Information: May be taken up to six times for a maximum of 6 credits.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 301 Theatre Design and Production Special Topics Credits: 3 (3-0-0)
Course Description: In-depth study of general interest in design and production. Possible topics may include history of decor, storyboarding, etc.
Prerequisite: TH 260.
Registration Information: Choose any two of the following: TH 262, TH 263, TH 264, TH 265, or TH 266.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 324 Teaching Creative Drama for Children Credits: 3 (1-6-0)
Course Description: Theoretical and practical experience in teaching creative drama.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Required field trips
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 341 History of Theatre in Performance Credits: 3 (3-0-0)
Course Description: Theatre in performance from its origins through the modern era.
Prerequisite: TH 141 and TH 241.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 343 Contemporary Plays and Alternative Theatre Credits: 3 (3-0-0)
Course Description: The study of revolutionary movements and alternative staging practices in theatre prompted by plays written from 1960 to the present.
Prerequisite: TH 243.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
TH 344 Dramaturgy Protocol Seminar  Credits: 3 (0-0-3)
Course Description: Training in the application of dramaturgical techniques to facilitate the collaborative creative process in contemporary performance practice.
Prerequisite: TH 343.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 349 Movement for Actors III Credits: 2 (0-4-0)
Course Description: Advanced assimilation techniques to challenge the actor physically and psychologically to conceptualize and fully realize theatrical characterization.
Prerequisite: TH 251.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 350 Classical Text Credits: 3 (3-0-0)
Course Description: The Cicely Berry approach to voice and speech for speaking classical text.
Prerequisite: TH 251, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 351 Acting III Credits: 3 (1-2-1)
Course Description: Acting Methods for challenges presented in plays by Brecht, Moliere, Chekov, Ibsen, Pirandello, O'Neill, and contemporary re-workings of the Greeks.
Prerequisite: TH 251.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 352 Acting for Singers Credits: 2 (1-0-1)
Course Description: Acting class specifically for singers: improv, beginning scene work, harnessing given circumstance and augmenting physical character life onstage.
Prerequisite: MU 401, may be taken concurrently.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

TH 353 Experimental Performance Credits: 3 (2-2-0)
Course Description: Artistic exploration of experimental performance via radical innovations in dance, theatre, music, literature, film, art, and performance art.
Prerequisite: None.
Term Offered: Summer.
Grade Mode: Traditional.
Special Course Fee: No.

TH 354 Directing Seminar Credits: 3 (0-0-3)
Course Description: Theatrical, practical, and creative approaches to directing a play: research, analysis, semiotics, identifying visual metaphor, point of view.
Prerequisite: TH 255 and TH 265, may be taken concurrently.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 355 Technical Theatre: Technical Direction Credits: 3 (1-4-0)
Course Description: Advanced training and techniques in construction management and technical production for the theatre.
Prerequisite: TH 161.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (odd years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

TH 356 Digital Media Design for Live Performance II Credits: 3 (2-2-0)
Course Description: Advanced sound and projection design techniques (including sound control, microphone arrays, animation and mapping) in live performance settings.
Prerequisite: TH 264 and TH 266.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 357 Advanced Makeup and Hair Design Credits: 3 (2-2-0)
Course Description: The practice of scenic design from text to idea to realized work. Advanced scenic design techniques in divergent and increasingly complex situations.
Prerequisite: TH 267, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 358 Advanced Makeup and Hair Design Credits: 3 (2-2-0)
Course Description: The practice of scenic design from text to idea to realized work. Advanced scenic design techniques in divergent and increasingly complex situations.
Prerequisite: TH 267, may be taken concurrently.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 359 Advanced Makeup and Hair Design Credits: 3 (2-2-0)
Course Description: Advanced techniques in makeup, hair, and wig design for theatre.
Prerequisite: TH 269.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
TH 370A Theatre Assistant: Design Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty designer in full production locally or offsite.
Prerequisite: TH 365.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 370B Theatre Assistant: Directing Credits: Var[1-18] (0-0-0)
Course Description: Assist a guest professional or faculty director in full production locally or offsite.
Prerequisite: TH 355.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 375 Playwright's Workshop Credits: 3 (1-0-2)
Course Description: Character, conflict, structure, setting, dialogue, and the process of rewriting, resulting in a finished 10-minute play.
Prerequisite: TH 241 and TH 343.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 384 Supervised College Teaching Credits: Var[1-3] (0-0-0)
Course Description: None.
Registration Information: Junior standing; written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted toward graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 386 Theatre Practicum III Credit: 1 (0-2-0)
Course Description: Practical experience in mounting theatrical productions.
Prerequisite: TH 286.
Registration Information: This is a partial-semester course.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

TH 392 Theatre Seminar Credits: 3 (0-0-3)
Course Description: Various current theatre topics taught by visiting professionals, for example, “The League of Regional Theatres is our National Theatre.”
Prerequisite: TH 243, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 400 Theatre Production Workshop Credits: Var[1-3] (0-0-0)
Course Description: Explores both the practical and dramaturgical essences of the production of a play.
Prerequisite: None.
Registration Information: Written consent of instructor. Maximum of 6 credits of TH 400 allowed to be counted toward the major. May not be taken concurrently with TH 471. Required field trips.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

TH 401 Theatrical Design and Prod Advanced Topics Credits: 3 (2-2-0)
Course Description: Intensive study for advanced TD&P students, e.g., property design, advanced costume technology, wigmaking, company management, rigging, pyro, etc.
Prerequisite: (TH 160) and (TH 362, may be taken concurrently or TH 363, may be taken concurrently or TH 364, may be taken concurrently or TH 365, may be taken concurrently or TH 366, may be taken concurrently).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 449 Commedia and Masks Credits: 3 (0-0-3)
Course Description: Playing comedy, including commedia del'arte techniques, clown work, masks, circus techniques, mime, and scene work from comic scripts.
Prerequisite: TH 351, may be taken concurrently or TH 355, may be taken concurrently or TH 357, may be taken concurrently.
Restriction: None.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 450 Professional Actor Preparation Credits: 3 (2-2-0)
Course Description: Portfolios, casting, breakdowns, reels, agents, managers, interviews, cold reading techniques, on-camera work, marketing.
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 451 Advanced Topics in Acting Credits: 3 (2-2-0)
Course Description: Author-specific actor challenges (e.g. Brecht, Beckett, Shakespeare, Chekhov, Moliere, and contemporary writers).
Prerequisite: TH 351.
Registration Information: Must register for lecture and laboratory. May be taken three times for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

TH 455 Advanced Directing Credits: 4 (2-0-2)
Course Description: Intensive practical experience in stage direction, focusing on specific directional challenges posed by various types of texts and multiple collaborative projects.
Prerequisite: TH 344, may be taken concurrently or TH 350, may be taken concurrently or TH 355.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

TH 460 Design Portfolio and Professional Preparation Credits: 3 (2-2-0)
Course Description: Creating effective portfolio and design presentation; digital portfolios, storyboarding, articulating concepts, professional preparation for career.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
TH 471  Capstone in Theatre Practice  Credits: 3 (0-0-3)  
Course Description: Major production assignment in acting, design, production, or dramatic literature.  
Prerequisite: None.  
Registration Information: Written consent of instructor.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 475  Advanced Playwriting  Credits: 3 (2-0-1)  
Course Description: Development of imaginative capabilities and insights, to articulate an individual voice as a writer of longer and more complex plays for theatre.  
Prerequisite: TH 344 and TH 375.  
Registration Information: Must register for lecture and recitation.  
Term Offered: Spring (odd years).  
Grade Modes: S/U within Student Option, Trad within Student Option.  
Special Course Fee: No.

TH 478  Theatre in London Seminar  Credits: 3 (0-0-3)  
Course Description: Seminar to prepare for study in London for theatre research as an evolving art form rich in historical and artistic traditions.  
Prerequisite: TH 141.  
Registration Information: Must have concurrent registration in TH 479.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 479  Theatre in London: Travel Abroad  Credits: 3 (0-0-3)  
Course Description: To foster theatre research as an evolving art form rich in historical and artistic traditions. Students will attend 13-15 live theatre productions.  
Prerequisite: TH 141.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 482  Theatre in London--Travel Abroad  Credits: 3 (0-0-3)  
Course Description: Study abroad in and around London to foster research into theatre as an evolving art form with rich historical and artistic traditions.  
Prerequisite: None.  
Registration Information: Must be in good academic and disciplinary standing.  
Term Offered: Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 484  Supervised College Teaching  Credits: Var[1-3] (0-0-0)  
Course Description:  
Prerequisite: TH 384.  
Registration Information: Written consent of instructor; students must have taken the course with which they will be assisting. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 486  Theatre Practicum IV  Credits: 2 (0-10-0)  
Course Description: Advanced topics in applied theatre production. Challenges in developing and mounting a theatrical performance.  
Prerequisite: TH 386.  
Terms Offered: Fall, Spring.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

TH 487  Theatre Internship  Credits: Var[1-12] (0-0-0)  
Course Description: Advisor-approved position at a professional regional theatre, a professional training program, or professional summer theatre.  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 491  Repertory Theatre Workshop  Credits: Var[1-18] (0-0-0)  
Course Description: Principles and practice of repertory theatre operation; practical experience offered.  
Prerequisite: None.  
Registration Information: Audition only.  
Term Offered: Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

TH 492  Theatre Seminar  Credits: 3 (0-0-3)  
Course Description: Contemporary theatre practice, trends, in-depth study of genres, authors, current theatre research, e.g., "Theatre of Revolt", "Beckett's Theatre".  
Prerequisite: TH 343.  
Terms Offered: Fall, Spring.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 495  Independent Study  Credits: Var[1-18] (0-0-0)  
Course Description:  
Prerequisite: None.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Instructor Option.  
Special Course Fee: No.

TH 498  Theatre Research  Credits: Var[3-6] (0-0-0)  
Course Description: Scholarly research paper in theatre. Topic approved by faculty advisor.  
Prerequisite: None.  
Registration Information: Theatre majors only. Written consent of faculty advisor.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

TH 499  Theatre Thesis  Credits: Var[3-6] (0-0-0)  
Course Description: Written thesis in theatre. Topic approved by faculty advisor.  
Prerequisite: None.  
Registration Information: Written consent of faculty advisor.  
Terms Offered: Fall, Spring, Summer.  
Grade Mode: Traditional.  
Special Course Fee: No.

Veterinary Medicine-VM (VM)
Courses

VM 603 Veterinary Science: Research and Methods Credit: 1 (1-0-0)
Course Description: Conduct of responsible research, contributions of research to the practice of veterinary medicine, and career opportunities.
Prerequisite: None.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 606 Veterinary Immunology Credits: 3 (3-0-0)
Course Description: Infectious agents, immune-mediated diseases, immune deficiencies, and principles of vaccination.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 610 Foundations of Veterinary Medicine I Credit: 1 (5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Restriction: Must register for lecture and laboratory.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 611 Foundations of Veterinary Medicine II Credit: 1 (5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 612 The Healer's Art Credit: 1 (0-0-1)
Course Description: Exploration of student experiences, beliefs, and values related to their work as veterinary medical professionals.
Prerequisite: None.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Modes: S/U Sat/Unsat Only, Traditional.
Special Course Fee: No.

VM 616 Functional Anatomy Credits: 9 (5-8-1)
Course Description: Intensive study of the gross anatomy of domestic animals. Anatomy studied comprises canine, feline, bovine, equine, small ruminant, and porcine species. Emphasis is on canine and equine anatomy. Comparative understanding of the anatomy of organ systems will support clinical instruction in the professional curriculum.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture, lab, and recitation.
Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 618 Veterinary Physiology and Histology Credits: 7 (6-2-0)
Course Description: Physiology and microscopic anatomy of endocrine, hemopoietic, lymphatic, cardiovascular, respiratory, gastrointestinal, and urinary systems in selected domestic animals.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 619 Veterinary Neurobiology Credits: 4 (3-3-0)
Course Description: Structural and functional foundations of nervous system activity; introduction to clinical neurology.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 621 Exotic Animal Anatomy and Husbandry Credits: 2 (1-2-0)
Course Description: Applied veterinary anatomy and husbandry of birds, reptiles, amphibians, and fish.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 623 Veterinary Nutrition and Metabolism Credits: 2 (2-0-0)
Course Description: Intermediary metabolism, nutrients, and animal nutrition.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
VM 624 Veterinary Feeds and Feeding Credits: 3 (2-2-0)
Course Description: Description, advantages, and limitations of feedstuffs fed to domestic livestock; nutrient requirements and formulation of rations for various needs.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 625 Principles of Diagnostic Imaging Credits: 2 (2-0-0)
Course Description: Diagnostic film and digital radiography, computed tomography, ultrasound, magnetic resonance, nuclear medicine, and radiographic and sonographic anatomy.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 637 Veterinary Bacteriology and Mycology Credits: 3 (3-0-0)
Course Description: Biology of bacterial and fungal pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 638 Veterinary Parasitology Credits: 2 (2-0-0)
Course Description: Biology of helminth, arthropod, and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 639 Veterinary Virology Credits: 2 (2-0-0)
Course Description: Biology of viral pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 640 Biology of Disease I Credits: 5 (4-0-1)
Course Description: Introduction to mechanisms of subcellular, cellular, tissue, and organ response to injury and associated pathological processes.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 648 Food Animal Production and Food Safety Credits: 2 (2-0-0)
Also Offered As: VS 648.
Course Description: Basic orientation to food animal production units, herd health concepts, and issues of food safety from preharvest through processing and distribution.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program. Credit not allowed for both VM 648 and VS 648.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 707 Emerging Issues in Infectious Diseases Credit: 1 (1-0-0)
Course Description: Influence of microbial, host, and environmental changes on the emergence, control, and prevention of infectious disease of veterinary importance.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 710 Foundations of Veterinary Medicine III Credit: 1 (.5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 711 Foundations of Veterinary Medicine IV Credit: 1 (.5-1.5-0)
Course Description: Development of professional skills (ethics, communication, physical exam, surgical skills) necessary for the practice of veterinary medicine.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
VM 712 Veterinary Professional Development Credits: 3 (3-0-0)
Course Description: Veterinary professional development including personal and practice finance, legal issues, career development, practice management, client relations.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 714 Veterinary Preventive Medicine Credits: 4 (4-0-0)
Course Description: Principles of health promotion and disease prevention in populations.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 716 Principles of Shelter Veterinary Medicine Credit: 1 (1-0-0)
Course Description: Introduces the principles of veterinary shelter medicine. Emphasis on management of small animals with herd health concepts.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 719 Evidence-Based Medical Herbology Credit: 1 (1-0-0)
Course Description: Critical evaluation, mechanisms of action, indications, contraindications, herb-drug interactions for botanical medicines used in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Professional.
Term Offered: Spring.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

VM 720 Alternative and Complementary Therapeutics Credit: 1 (1-0-0)
Course Description: Mechanisms and efficacy of alternative and complementary therapeutics used in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 721 Non-Mammalian Vertebrate Medicine Credits: 2 (2-0-0)
Course Description: Diagnosis and treatment of diseases of non-mammalian vertebrates.
Admission to professional curriculum in veterinary medicine.
Prerequisite: VM 621.
Registration Information: All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 722 Veterinary Pharmacology Credits: 4 (4-0-0)
Course Description: Basic and clinical pharmacology, therapeutic practice, and pharmacy management.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 724 Bioanalytical Pathology Credits: 6 (4-0-2)
Course Description: Mechanisms, interpretation, and applications of laboratory analyses for solving diagnostic problems.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 726 Principles of Imaging Interpretation I Credits: 2 (1-0-1)
Course Description: Clinical indications and interpretation for imaging modalities in examination of body systems.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 728 Principles of Imaging Interpretation II Credits: 2 (2-0-0)
Course Description: Interpretation of clinical imaging techniques used in diagnosis of specific diseases of organ systems.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
VM 730  Applied Animal Behavior  Credits: 2 (2-0-0)
Course Description: Identification, characterization, and treatment of common disorders of animal behavior encountered by practicing veterinarians.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 731  Biology and Diseases of Small Mammals  Credits: 2 (2-0-0)
Course Description: Diagnosis and treatment of diseases of small mammals.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 732  Veterinary Sports Medicine and Rehabilitation  Credit: 1 (1-0-0)
Course Description: An introduction to the principles and practice of sports medicine and rehabilitation in veterinary medicine.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 733  Principles of Surgery  Credits: 2 (2-0-0)
Course Description: Principles and concepts of general and orthopedic surgery.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 737  Principles of Anesthesia  Credits: 3 (2-0-1)
Course Description: Integration of physiological and pharmacological principles in clinical anesthesia.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 741  Biology of Disease II  Credits: 4 (3-0-1)
Course Description: Pathogenesis of organ system diseases and integrated systemic pathology.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and recitation. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 742  Biology of Disease III  Credits: 3 (2-0-1)
Course Description: Pathogenesis of disease in organ systems, systemic pathology.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 744  Theriogenology  Credits: 3 (2-2-0)
Course Description: Reproductive function and disease, including mammary gland and endocrine regulation of reproduction and lactation.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Must register for lecture and laboratory. Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 745  Clinical Sciences I  Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of cardiovascular, urinary, and digestive-hepatic systems.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 747  Clinical Sciences II  Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of organ systems.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
VM 749 Clinical Sciences III Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of organ systems.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 751 Veterinary Clinical Toxicology Credits: 2 (2-0-0)
Course Description: Common toxicants and poisonous plants encountered by companion and farm animal species, their pathophysiological effects, and clinical treatments.
Prerequisite: None.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 753 Clinical Sciences IV Credits: 5 (5-0-0)
Course Description: Diagnostic approaches to common medical problems of organ systems.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

VM 757 Bovine Herd Medicine Credits: 3 (3-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of food animals.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 763 Equine Medicine and Surgery Credits: 5 (5-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of horses.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

VM 773 Small Animal Medicine and Surgery I Credits: 4 (4-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of dogs and cats.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 774 Small Animal Medicine and Surgery II Credits: 4 (4-0-0)
Course Description: Health management, and diagnosis and treatment of diseases of dogs and cats.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 786A Junior Practicum Credits: Var[6-8] (0-0-0)
Course Description: Training in clinical procedures for the diagnosis and treatment of animal diseases.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

VM 786B Senior Practicum Credits: Var[1-22] (0-0-0)
Course Description: Training in clinical procedures for the diagnosis and treatment of animal diseases.
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

VM 795 Independent Study Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Professional.
Registration Information: Admission to professional curriculum in veterinary medicine. All courses must be taken in prescribed sequence in the PVM program.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
WR 417 Watershed Measurements Credits: 3 (2-3-0)
Course Description: Instrument and field techniques in watershed science. Project design and data analysis.
Prerequisite: None.
Registration Information: Must have concurrent registration in WR 416.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 418 Land Use and Water Quality Credits: 3 (3-0-0)
Course Description: Physical, chemical, biological water quality parameters affecting land use; land management to maintain water quality; water quality standards, legislation.
Prerequisite: None.
Registration Information: CHEM 103; CHEM 104 or CHEM 107; CHEM 108 or CHEM 111; CHEM 112.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 419 Water Quality Laboratory for Wildland Managers Credits: 2 (0-4-0)
Course Description: Sampling and determination of water quality parameters.
Prerequisite: None.
Registration Information: Must have concurrent registration in WR 418.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.

WR 440 Watershed Problem Analysis Credits: 3 (2-2-0)
Course Description: Capstone integration of spatial watershed issues, focused on problem solving in watershed science.
Prerequisite: (NR 322 or NR 319) and (WR 416 and WR 418).
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 465 Eolian and Fluvial Transport Processes Credits: 4 (3-3-0)
Course Description: Fundamental physical principles of eolian and fluvial transport processes.
Prerequisite: PH 141.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 474 Snow Hydrology Credits: 3 (3-0-0)
Course Description: Snowfall, accumulation, distribution, physical processes in the snowpack, energy balance, ablation and runoff, measurement methods, runoff forecasting.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
WR 486 Watershed Field Practicum Credits: 2 (0-6-0)
Course Description: Field visits to watershed management projects and sites of significant field studies.
Prerequisite: None.
Restriction: Must be a: Junior.
Registration Information: Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 492 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 495 Independent Study-Watershed Resources Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 510 Watershed Management in Developing Countries Credits: 2 (2-0-0)
Course Description: Watershed management problems, approaches, and solutions in developing countries.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 511 Water Resource Development Credits: 3 (3-0-0)
Course Description: Basic principles of water resource management including surface and subsurface flows.
Prerequisite: None.
Registration Information: Graduate standing. Offered as an online course only. Written consent of instructor.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 512 Water Law for Non-Lawyers Credits: 3 (0-0-3)
Course Description: Basics of water law and policy for Colorado, western states, and the U.S.
Prerequisite: None.
Registration Information: Graduate standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 516 Cumulative Effects and Watershed Analysis Credits: 3 (2-0-1)
Course Description: Definition, causal processes, and modeling of cumulative watershed effects; comparison and evaluation of current watershed analysis procedures.
Prerequisite: WR 416 and WR 417.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 520 Evapotranspiration Credits: 2 (2-0-0)
Course Description: Theory, estimation, measurement, simulation, and application of evapotranspiration processes in hydrology.
Prerequisite: PH 122.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

WR 524 Modeling Watershed Hydrology Credits: 3 (2-2-0)
Also Offered As: CIVE 524.
Course Description: Development and application of watershed models: structure, calibration, evaluation, sensitivity analysis, simulation.
Prerequisite: (CIVE 322 or ENVE 322 or WR 416) and (STAT 301 or STAT 315 or CIVE 202) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Must register for lecture and laboratory. Credit not allowed for both WR 524 and CIVE 524.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 574 Advanced Snow Hydrology Credits: 4 (3-0-1)
Course Description: Snow processes in hydrologic cycle; physical and conceptual methods of modeling; techniques for measuring different states and change rates.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Registration Information: Must register for lecture and recitation.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 575 Snow Hydrology Field Methods Credits: 1 (0-2-0)
Course Description: Field course offering hands-on experience in snow hydrology.
Prerequisite: None.
Registration Information: Enrollment in a graduate program. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WR 616 Hillslope Hydrology and Runoff Processes Credits: 3 (1-0-2)
Course Description: Hillslope hydrology and runoff processes in different environments; implications for management and modeling.
Prerequisite: CIVE 322 or ENVE 322 or WR 416.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
WR 674 Data Issues in Hydrology Credits: 3 (3-0-0)
Course Description: Types of data, data sources, data quality, missing data, spatial data, data usage, sensitivity in models, error, presentation of data and results.
Prerequisite: WR 574.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 692 Seminar Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 695 Independent Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 696 Group Study Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 698 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 712 Watershed Systems Credits: 3 (2-2-0)
Course Description: Dynamic simulation of watershed behavior; application and evaluation of current hydrologic models.
Prerequisite: (WR 416 or CIVE 322 or ENVE 322) and (STAT 340).
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 714 Water Quality for Wildland Managers Credits: 3 (3-0-0)
Course Description: Sampling, statistics of sampling, concepts of ionic equilibrium, water quality modeling, instream flow requirements.
Prerequisite: WR 418.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

WR 798 Research Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

WR 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

Women's Studies-WS (WS)

Courses
WS 200 Introduction to Women's Studies Credits: 3 (3-0-0)
Course Description: Examination of gender roles in work, education, spirituality, relationships, health, institutions and organizations.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 269 Women of Color in the United States Credits: 3 (3-0-0)
Course Description: Surveying the contemporary experiences of women of various racialized ethnicities in the United States.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 270 Feminist Theory Credits: 3 (3-0-0)
Course Description: Contemporary feminist theories from multiple perspectives, including topics such as gender, race, sexuality, and oppression.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 270 Feminist Theory Credits: 3 (3-0-0)
Course Description: Contemporary feminist theories from multiple perspectives, including topics such as gender, race, sexuality, and oppression.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 370 Feminist Friendship Credits: 3 (3-0-0)
Course Description:
Prerequisite: WS 100 to 499.
Terms Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
WS 397 Group Study  Credits: 3 (0-0-3)
Course Description: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 472 Seminar in Women's Studies-Social Sciences  Credits: 3 (3-0-0)
Course Description: None.
Registration Information: Enrolled in Women's Interdisciplinary Studies Program.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

WS 484 Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description: Assist the instructor in women's and gender studies courses.
Prerequisite: None.
Registration Information: Enrolled in Ethnic Studies major, Women's Studies concentration or Women's Studies minor; junior standing; written consent of instructor. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

WS 487 Internship  Credits: Var[1-12] (0-0-0)
Course Description: Internship placement in women's/gender organization, institution, or program.
Prerequisite: None.
Registration Information: Enrolled in Ethnic Studies major, Women's Studies concentration or Women's Studies minor; junior standing.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

WS 495 Independent Study  Credits: Var[1-3] (0-0-0)
Course Description: None.
Registration Information: Approval of Women's Studies Director and relevant department chair (s).
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

WS 601 Foundations of Feminist Research  Credits: 3 (3-0-0)
Course Description: Feminist perspectives on epistemology and methodologies for conducting and interpreting research.
Prerequisite: None.
Restriction: Must be a: Graduate.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
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